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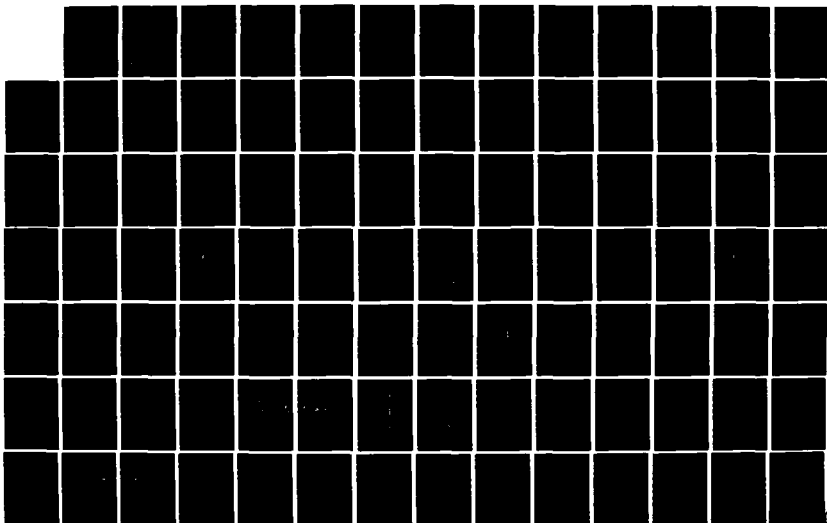
PHYSICAL AND BIOLOGICAL INVESTIGATIONS OF THE MAIN  
CHANNEL BORDER HABITAT. (U) CORPS OF ENGINEERS ST PAUL  
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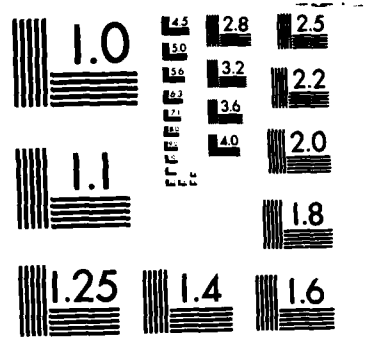
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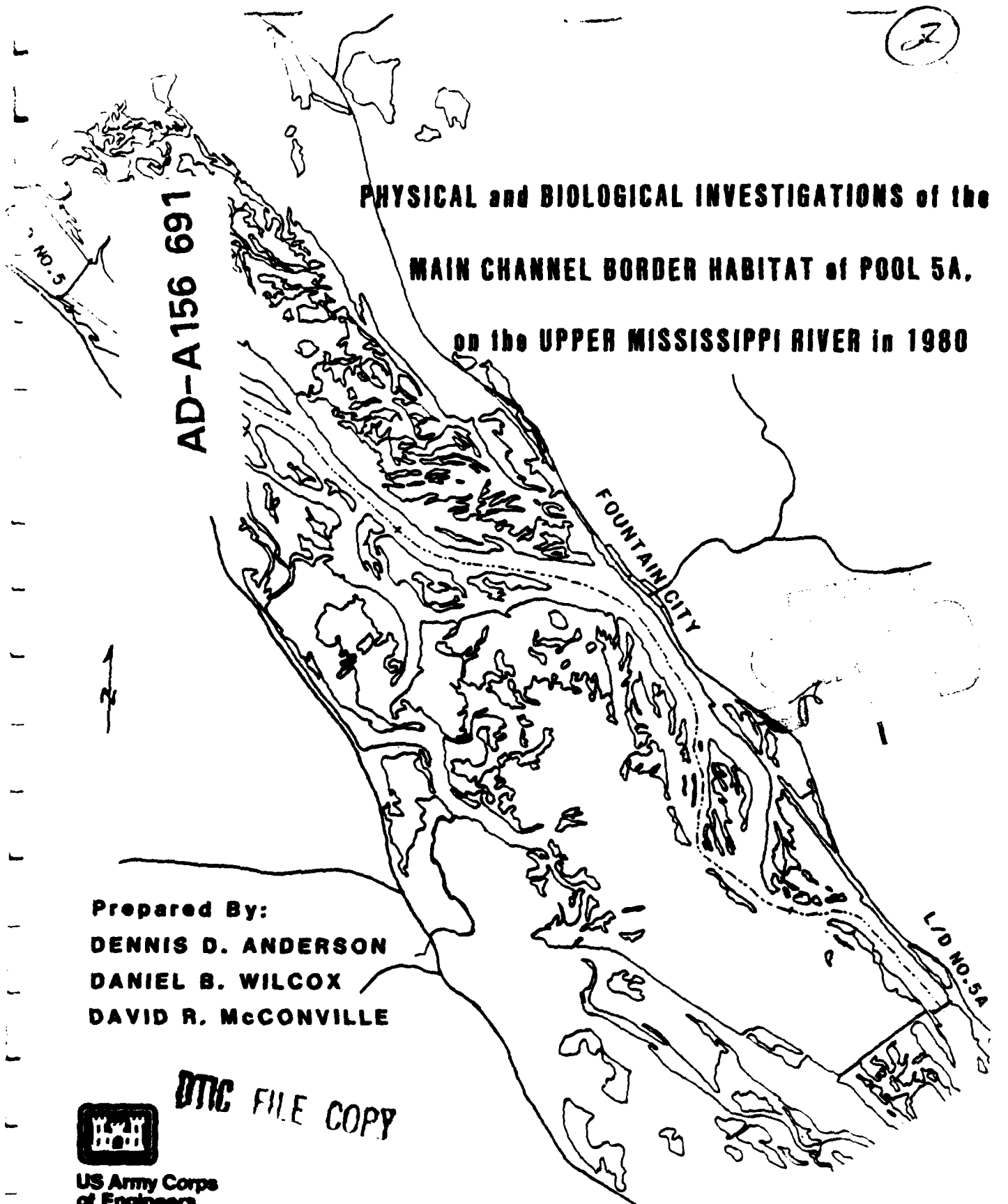


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**PHYSICAL and BIOLOGICAL INVESTIGATIONS of the  
MAIN CHANNEL BORDER HABITAT of POOL 5A,  
on the UPPER MISSISSIPPI RIVER in 1980**



**Prepared By:**  
**DENNIS D. ANDERSON**  
**DANIEL B. WILCOX**  
**DAVID R. McCONVILLE**

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**US Army Corps  
of Engineers**  
St. Paul District

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**VOLUME 2**

**85 7 08 215**

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<p>             The purpose of the 1980 main channel border (MCB) investigations was to              obtain basic information on the physical and biological characteristics of              habitat in the Upper Mississippi River. This information was needed to              assess the St. Paul District, Corps of Engineers, operation and              maintenance activities associated with the 9-foot navigation channel project.              (current velocity and direction, substrate type, and water depths)              selected for the entire MCB of pool 5A. The MCB of pool 5A was selected           </p>			

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for pool 5A because pool 5A was one of the shorter pools under the jurisdiction of the St. Paul District, because it has a diversity of MCB habitat types, and because a Corps of Engineers service base in Fountain City, Wisconsin, provided easy access and work areas.

From the results of the physical survey, a physical habitat classification system was developed that considered general substrate type, general habitat, current velocity, and water depths. From the intersections of these four factors, 18 physical habitat types were determined to be present in sufficient abundance to warrant further study. Macroinvertebrate and fisheries surveys were conducted at 18 study areas in August and September. Each of the 18 areas represented one of the 18 habitat types.

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VOLUME 2 - MAIN CHANNEL BORDER STUDY

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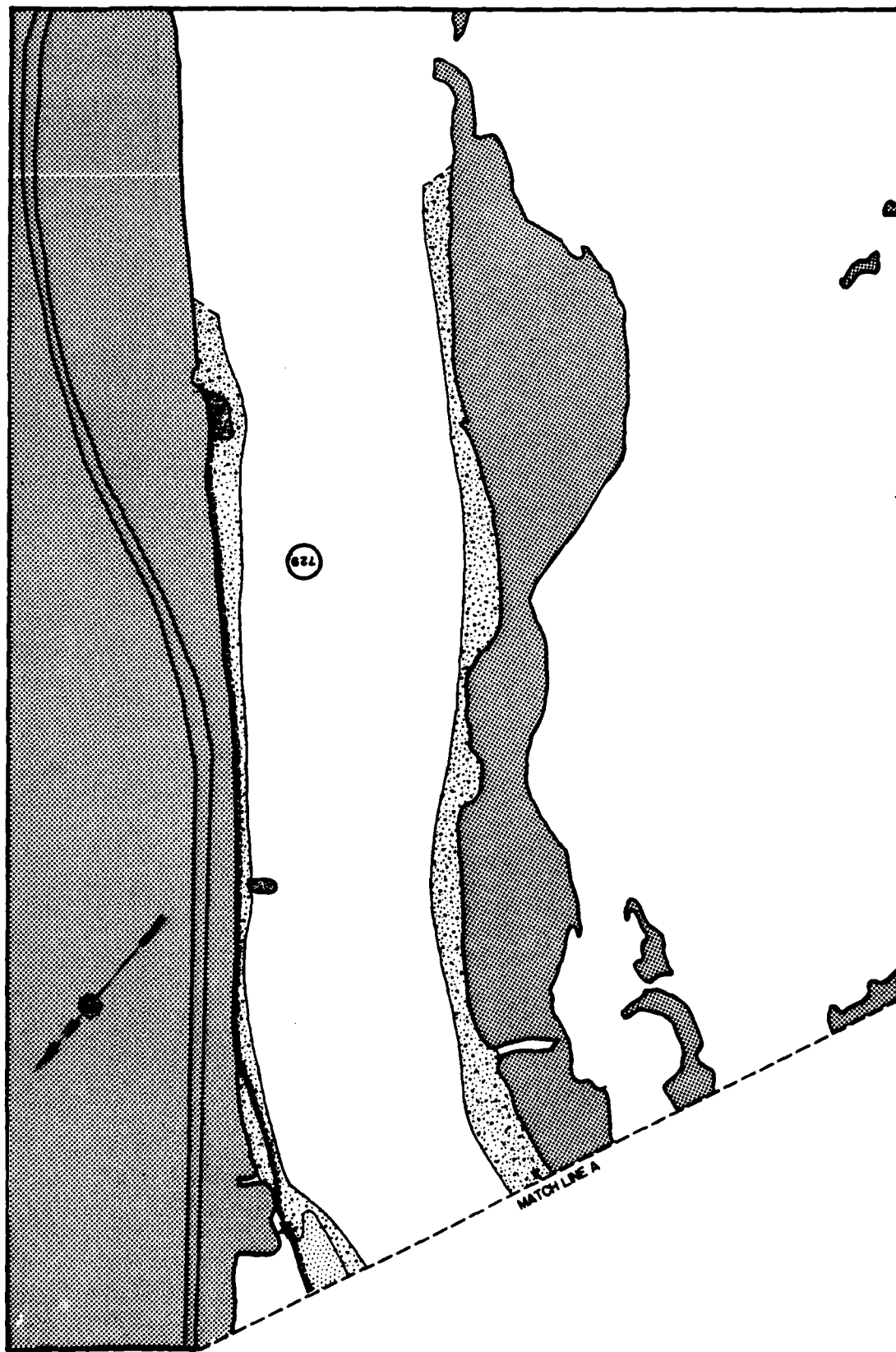


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# MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 728.55 - 729.55

## SUBSTRATE MAP

SCALE: 1 in. = 630ft.

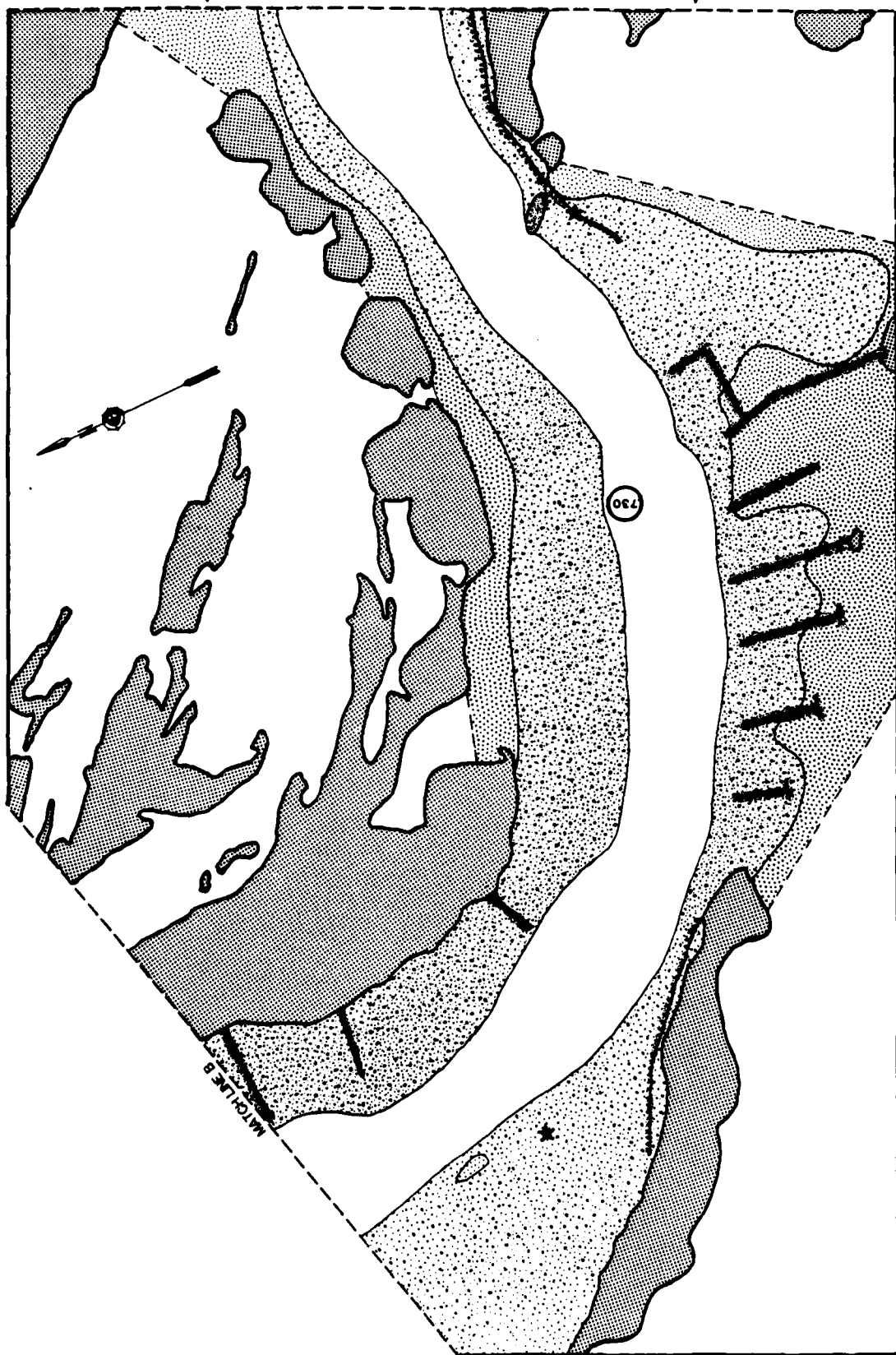
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ROCK SAND SILT

Figure A-1 General Substrate Map of River Mile 728.55 - 729.55

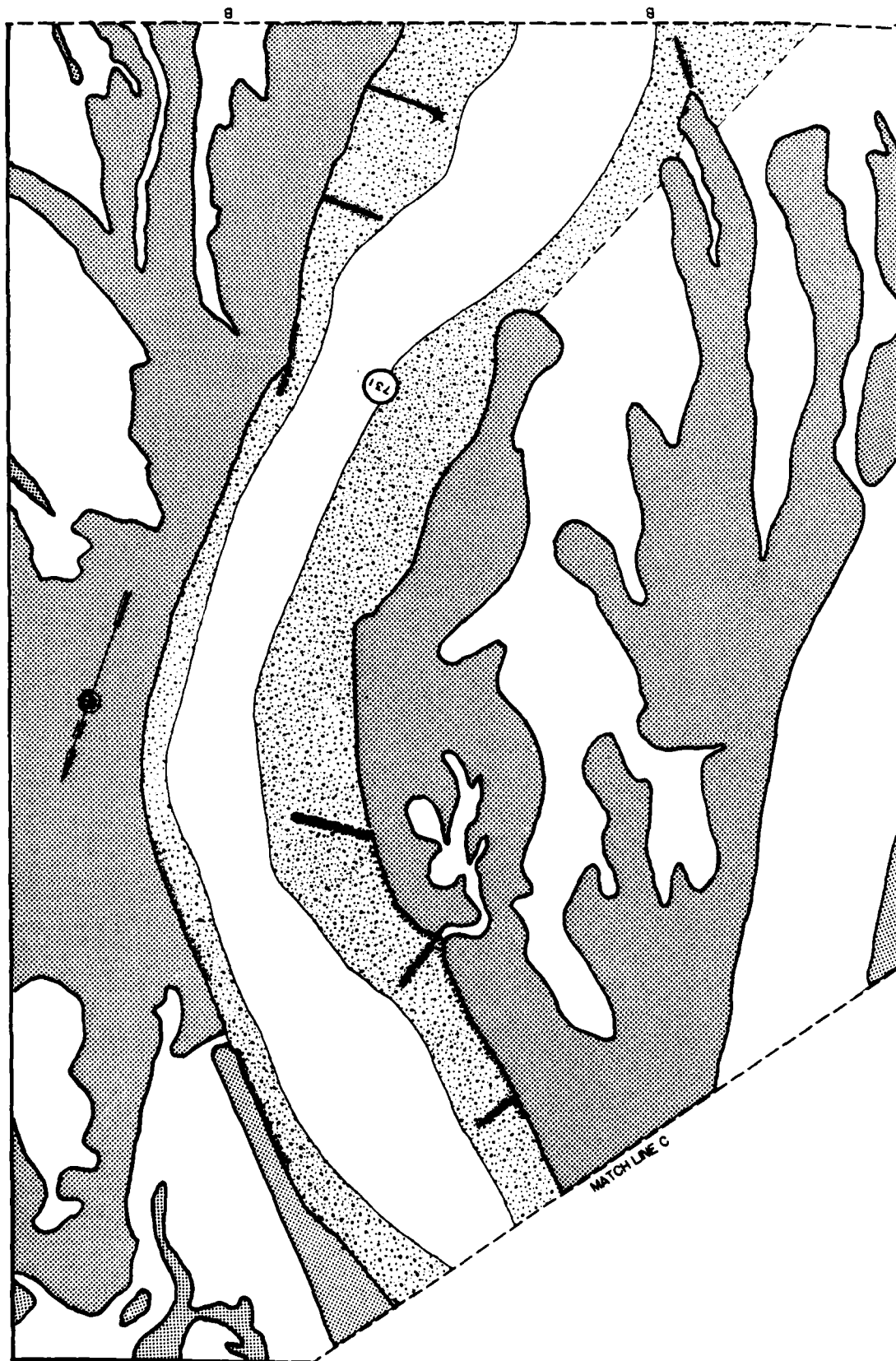




MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 729.55 - 730.65  
 SCALE: 1 in. = 630 ft. SUBSTRATE MAP

ROCK SAND SILT  
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Figure A-2 General Substrate Map of River Mile 729.55 - 730.65



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 730.65 - 731.75  
 SUBSTRATE MAP

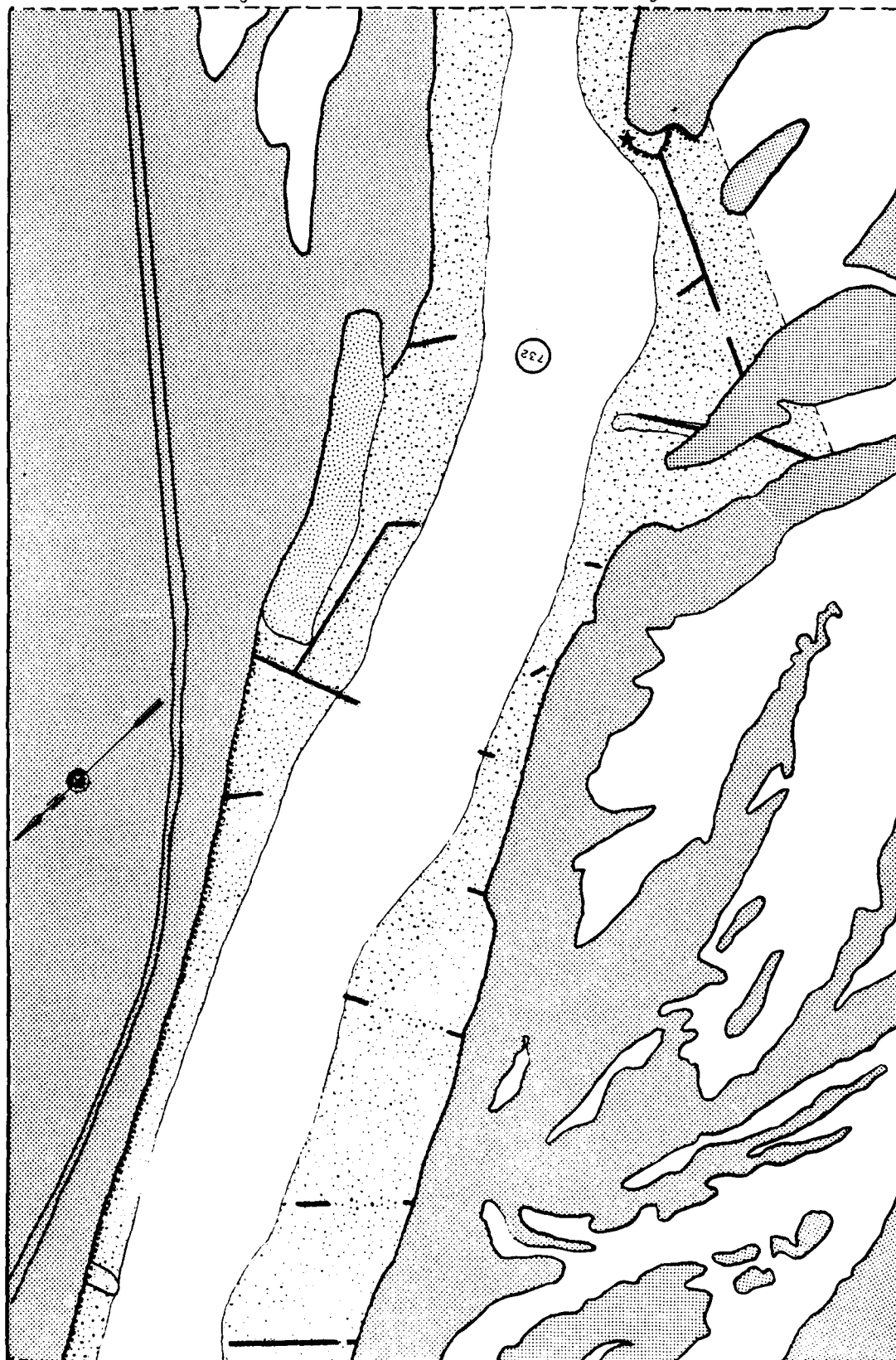
SCALE: 1 in. = 630 ft.

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Figure A-3 General Substrate Map of River Mile 730.65 - 731.75



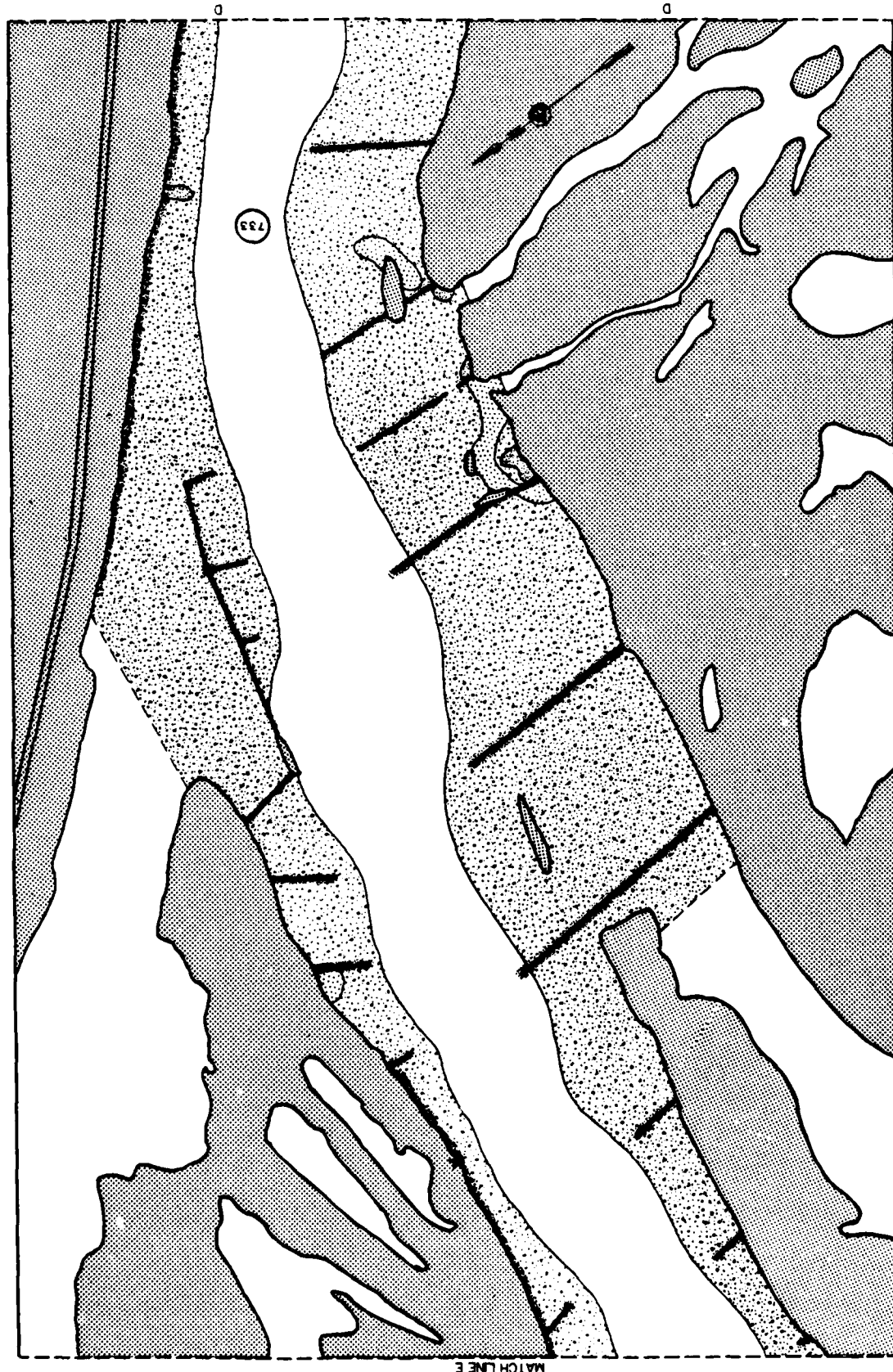
# MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 731.75 - 732.80

## SUBSTRATE MAP

SCALE: 1 in. = 630 ft.

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ROCK SAND SILT  
Figure A-4 General Substrate Map of River Mile 731.75 - 732.80



**MAIN CHANNEL BORDER STUDY**      **POOL 5A**      **RIVER MILE: 732.80 - 733.95**  
**SUBSTRATE MAP**  
 SCALE: 1 in. = 630 ft.

ROCK      SAND      SILT   
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Figure A-5 General Substrate Map of River Mile 732.80 - 733.95

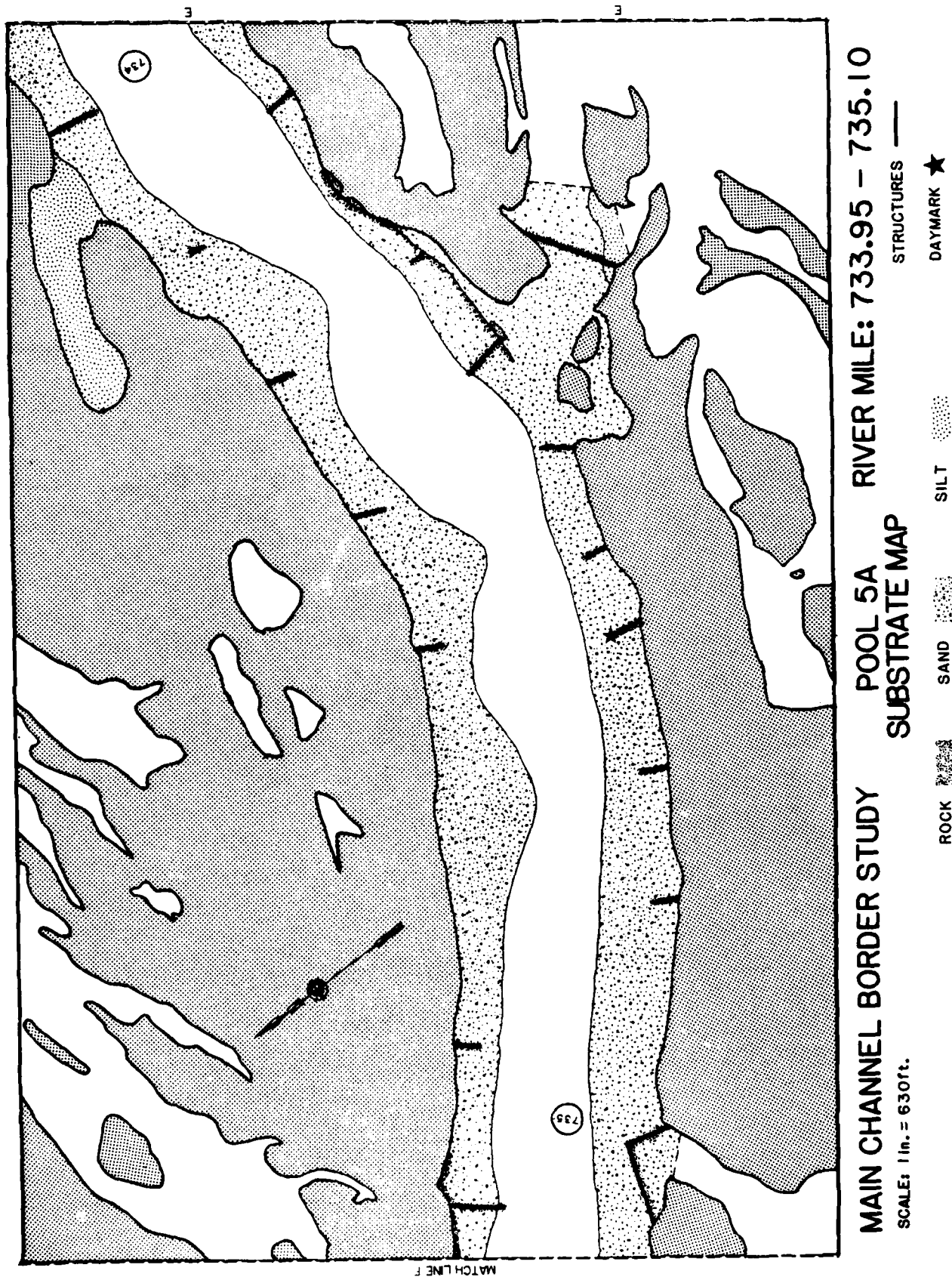
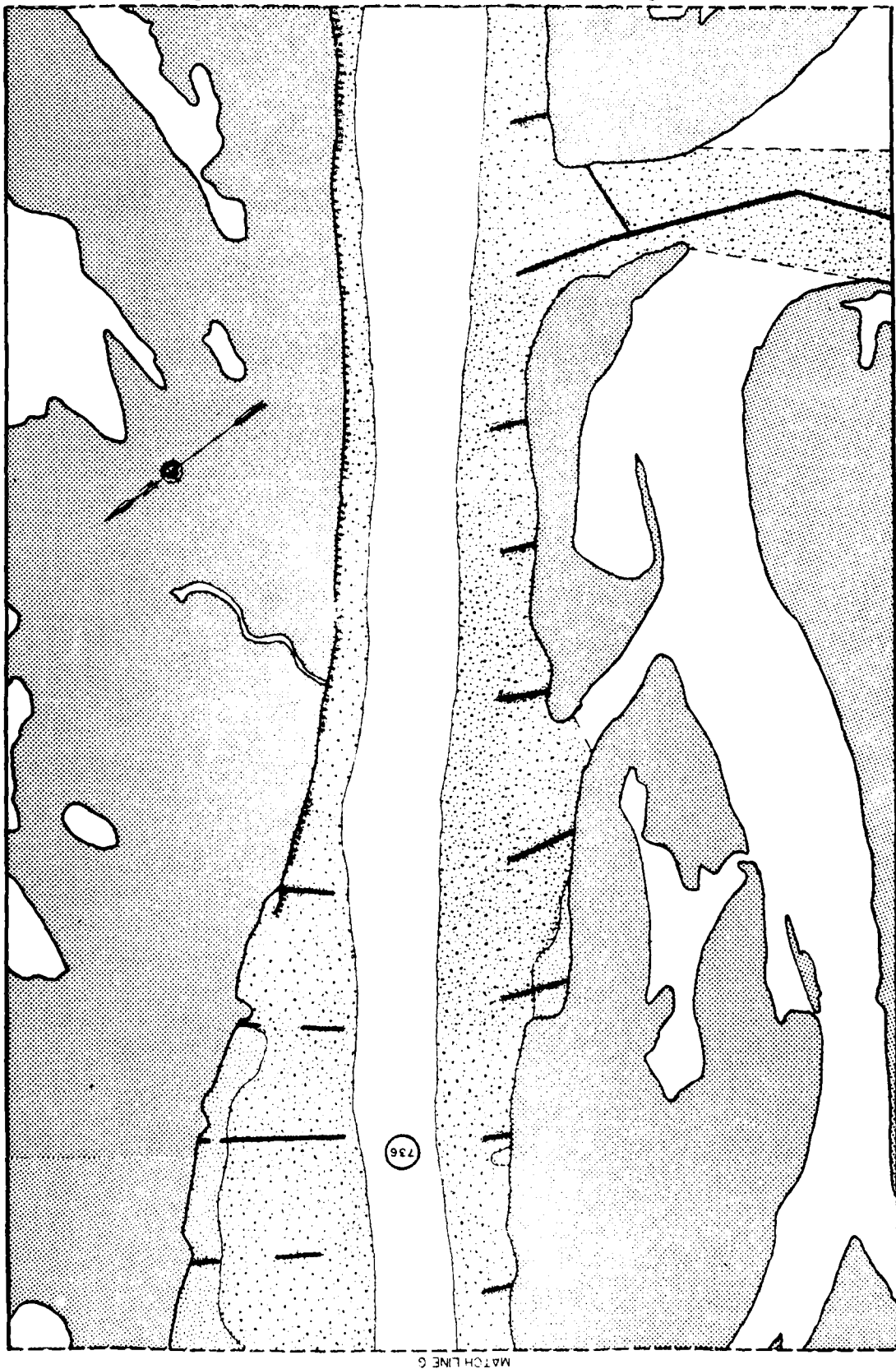


Figure A-6 General Substrate Map of River Mile 733.95 - 735.10



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 735.10 - 736.15

SCALE: 1 in. = 630 ft.

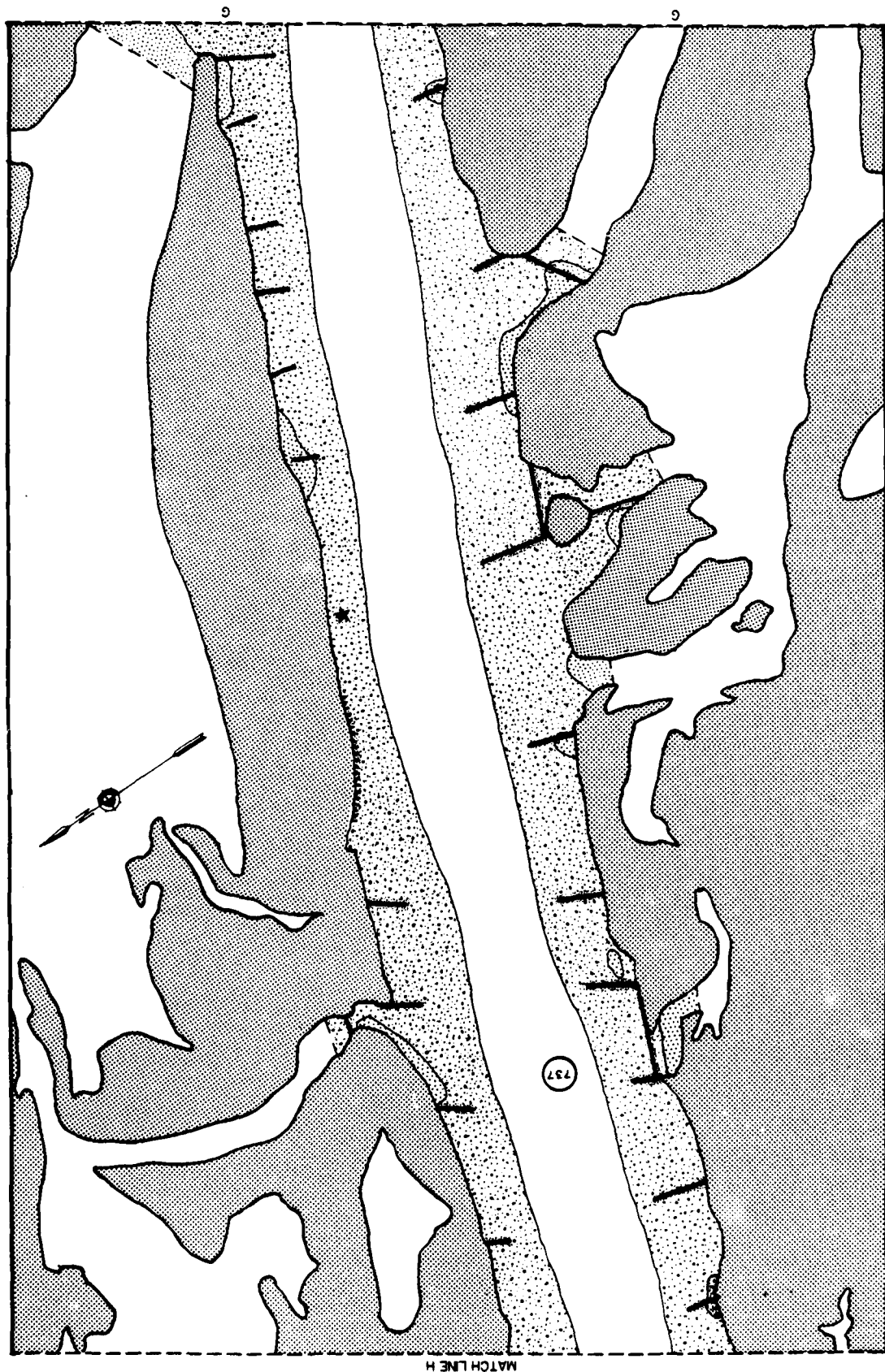
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Figure A-7 General Substrate Map of River Mile 735.10 - 736.15





# MAIN CHANNEL BORDER STUDY

## POOL 5A SUBSTRATE MAP

RIVER MILE: 736.15 - 737.25

SCALE: 1 in. = 630 ft.

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ROCK SAND SILT

Figure A-8 General Substrate Map of River Mile 736.15 - 737.25

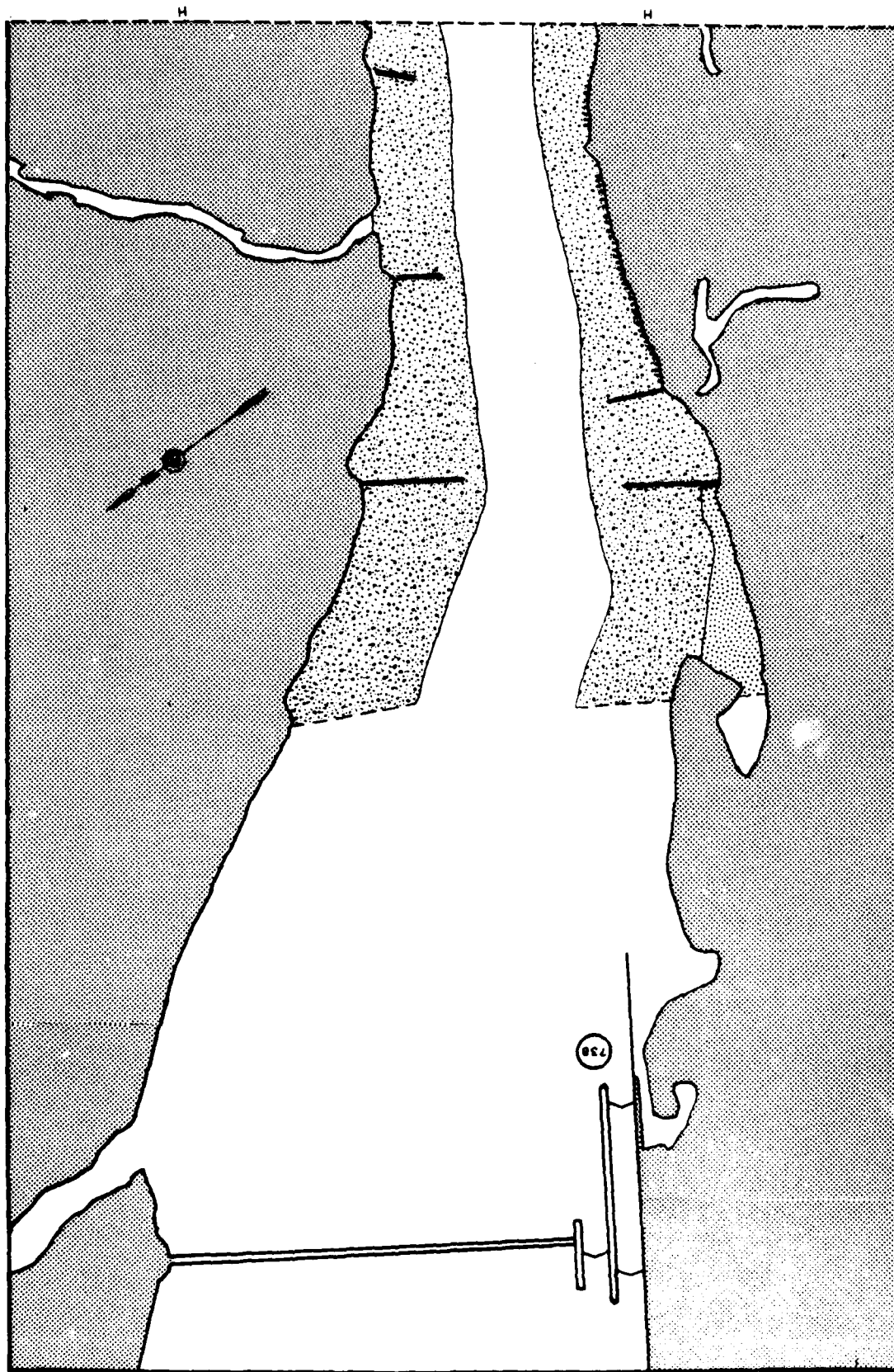


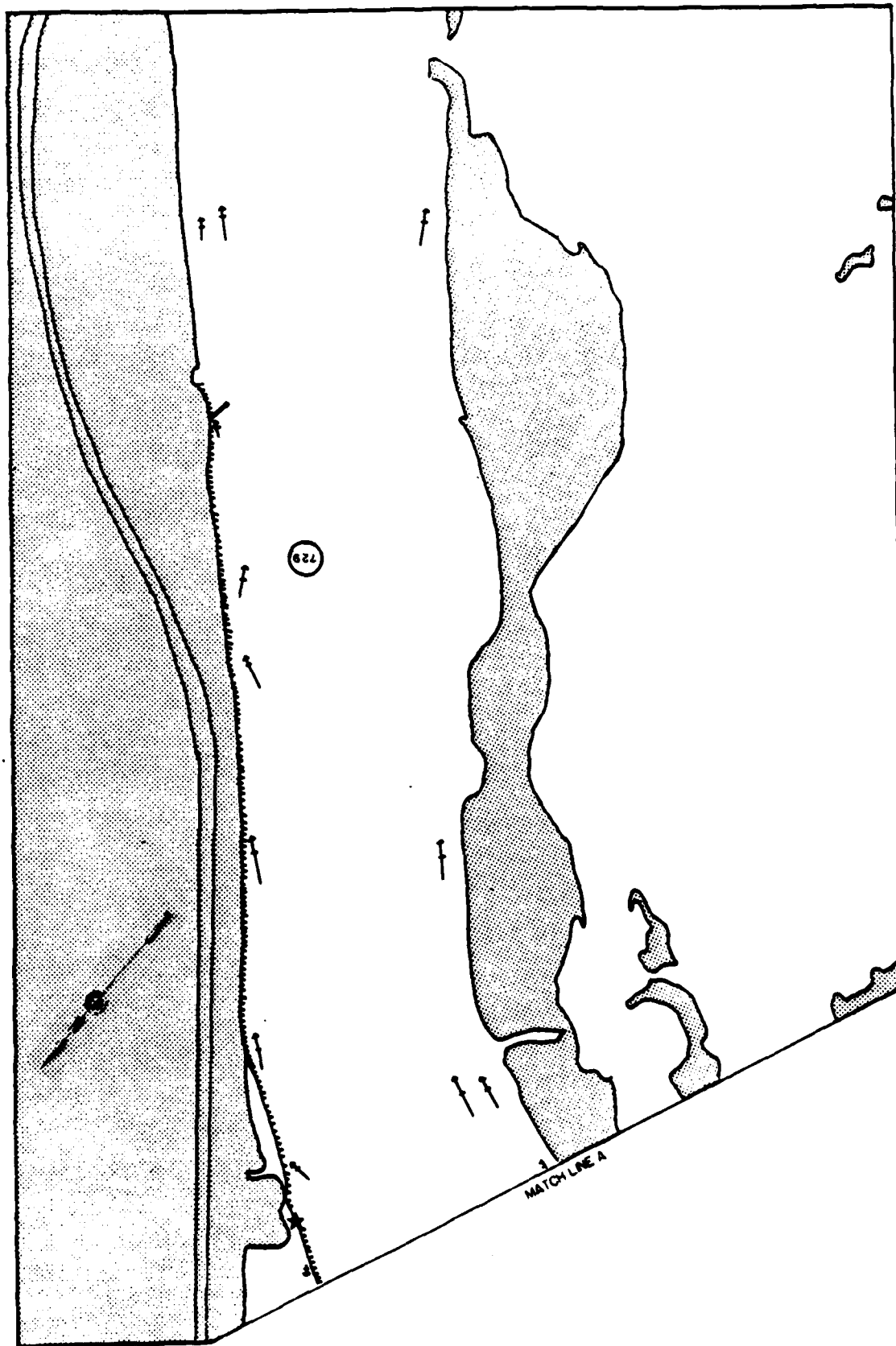
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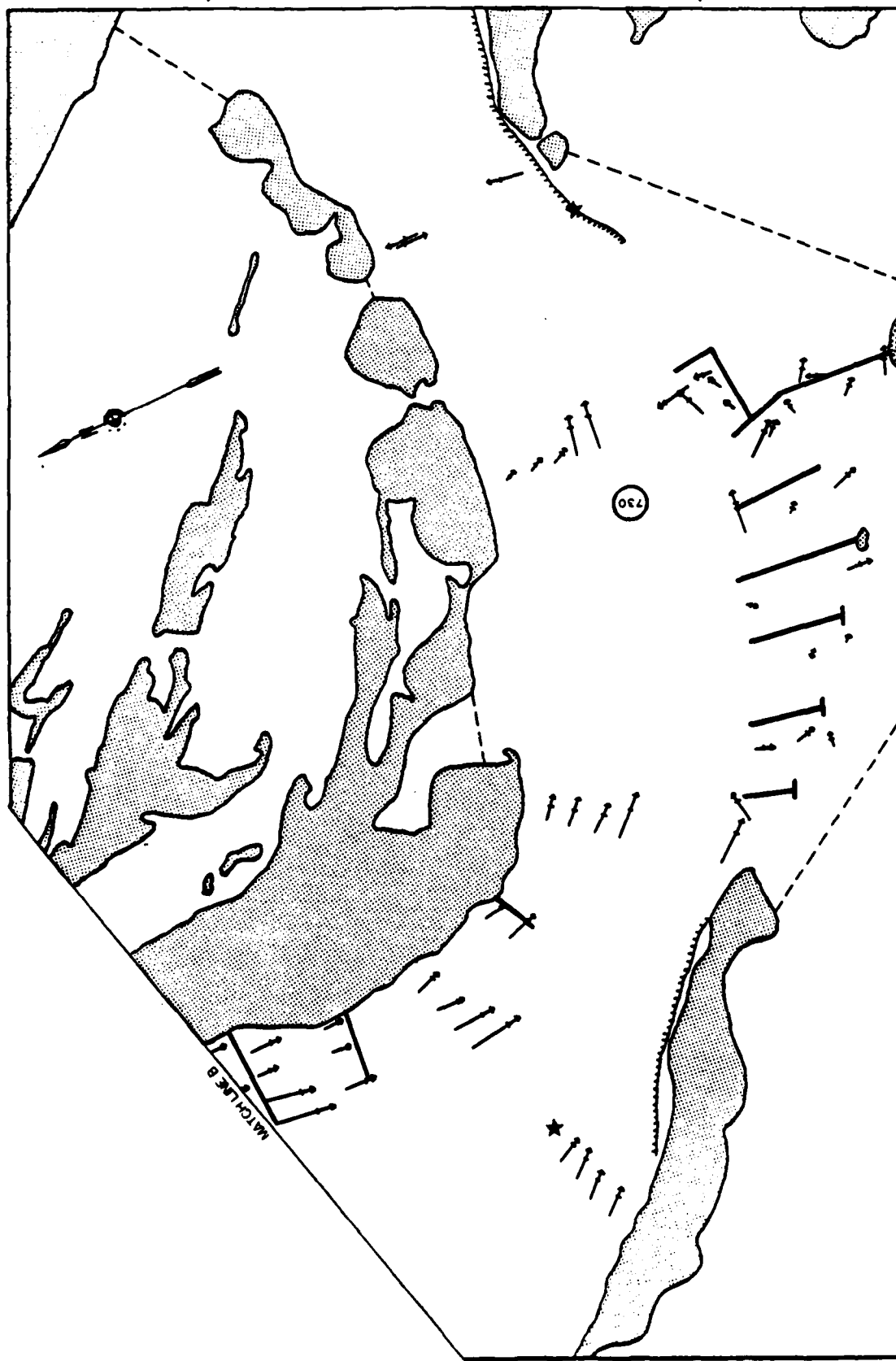
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MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 728.55 - 729.55  
 SCALE: 1 in. = 630 ft.  
 CURRENT DIRECTION & VELOCITY  $\rightarrow$  .25 in. = 1 fps  
 STRUCTURES —  
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Figure B-1 General Current Velocity and Direction Patterns - River Mile 728.55 - 729.55



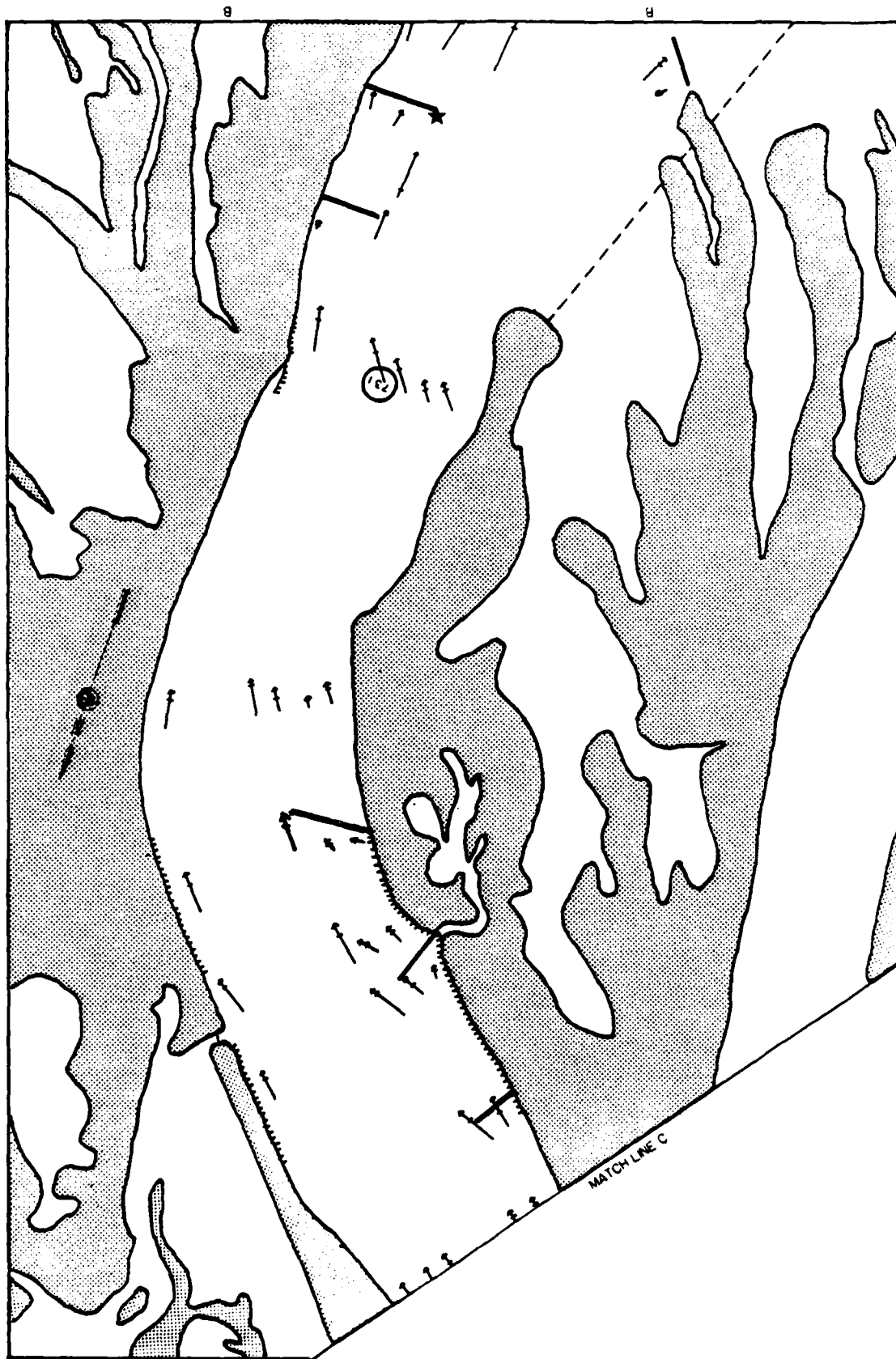
MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 729.55 - 730.65

SCALE: 1 in. = 630 ft.

CURRENT DIRECTION & VELOCITY  
 STRUCTURES  
 DAYMARK

CURRENT DIRECTION & VELOCITY → : .25 in. = 1 f.p.s.

Figure B-2 General Current Velocity and Direction Patterns - River Mile 729.55 - 730.65



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 730.65 - 731.75

SCALE: 1 in. = 630 ft.

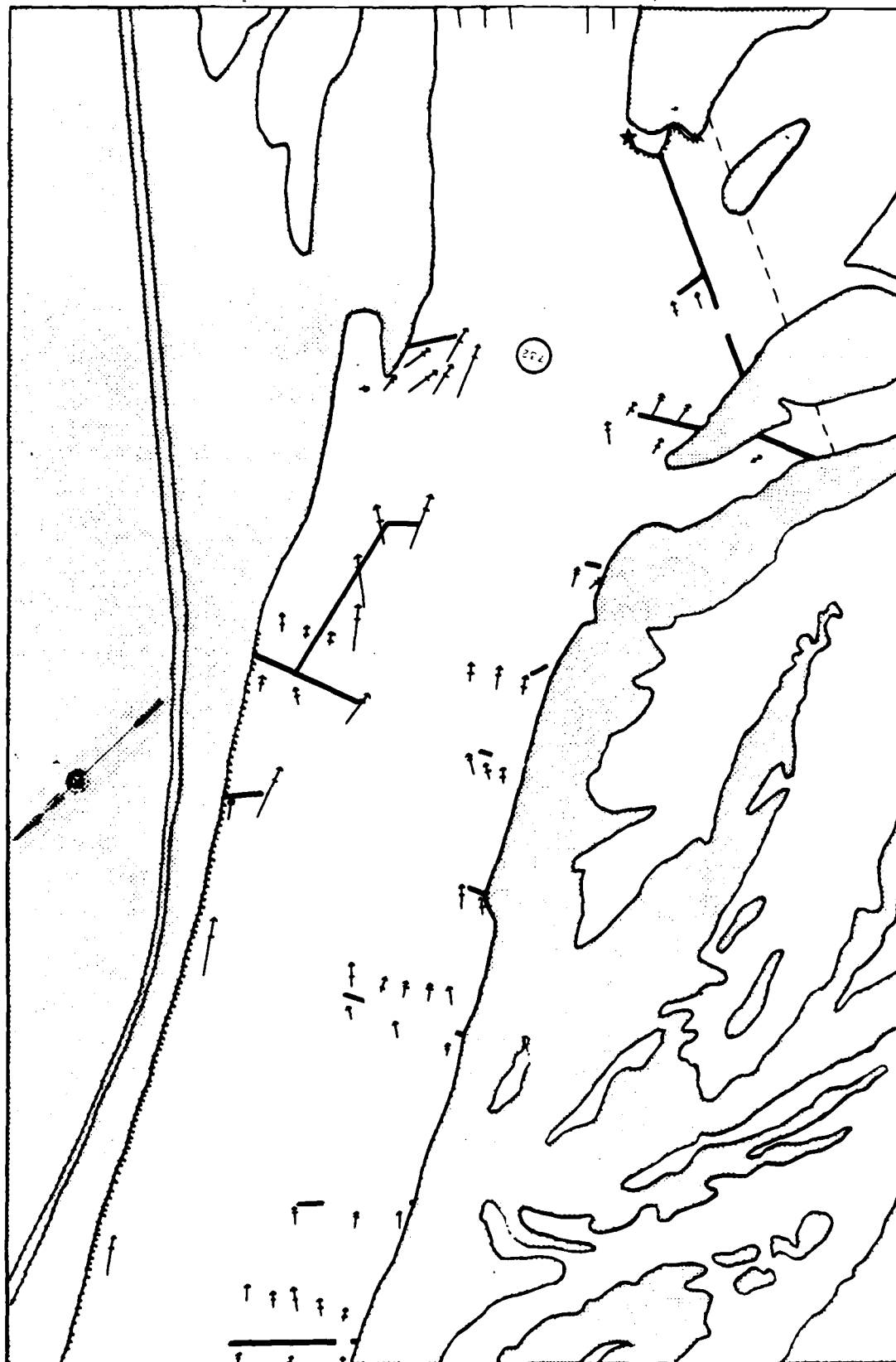
CURRENT DIRECTION & VELOCITY

1 fps

STRUCTURES

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Figure B-3 General Current Velocity and Direction Patterns - River Mile 730.65 - 731.75



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 731.75 - 732.80

SCALE: 1 in. = 630 ft.

CURRENT DIRECTION & VELOCITY

CURRENT DIRECTION & VELOCITY → : .25 in. = 1 fps

STRUCTURES —

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Figure B-4 General Current Velocity and Direction Patterns - River Mile 731.75 - 732.80



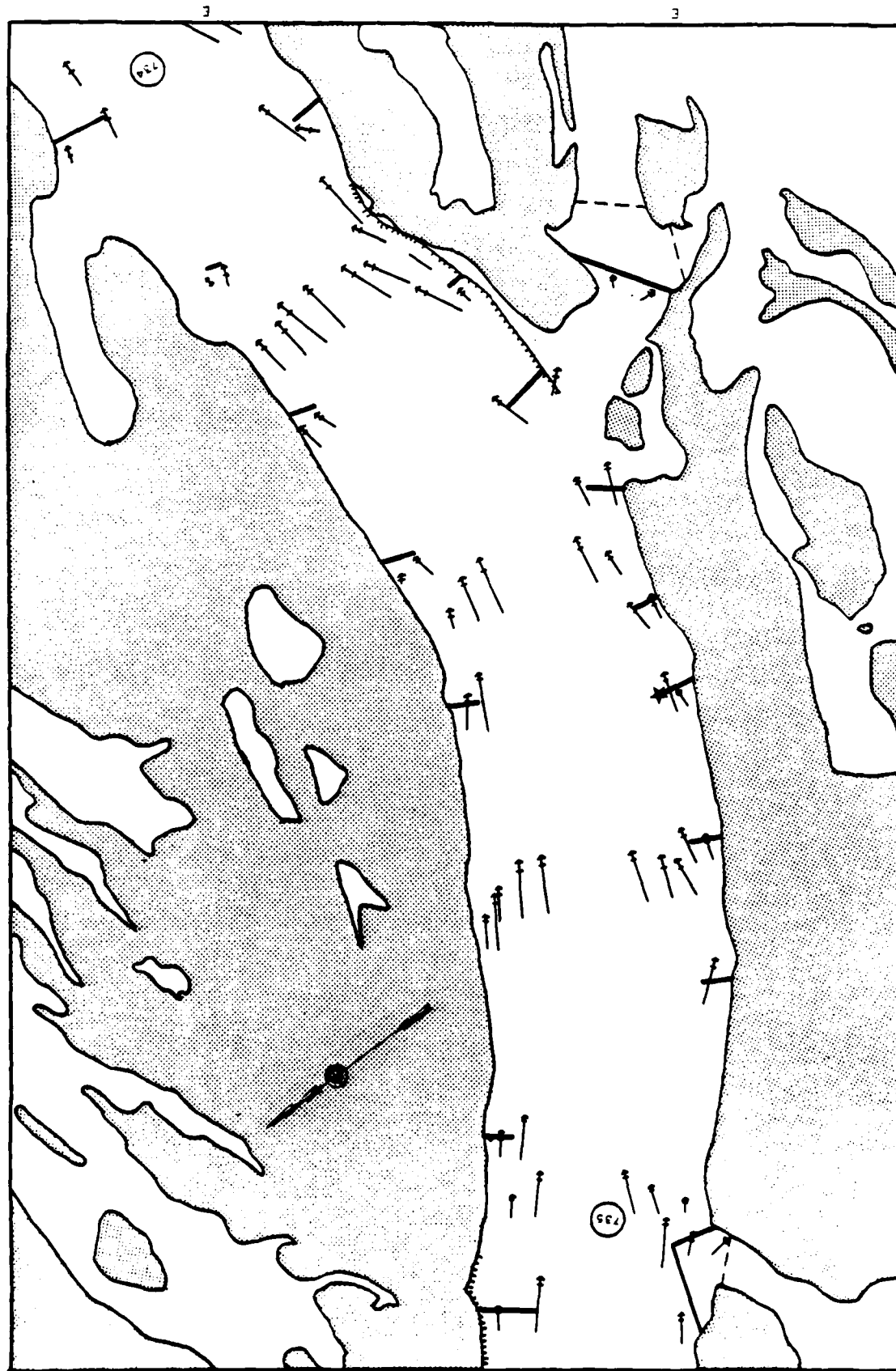
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 SCALE: 1 in. = 630 ft. CURRENT DIRECTION & VELOCITY

STRUCTURES —

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CURRENT DIRECTION & VELOCITY → : .25 in. = 1 fps

Figure B-5 General Current Velocity and Direction Patterns - River Mile 732.80 - 733.95



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 733.95 - 735.10  
 SCALE: 1 in. = 630 ft.  
 CURRENT DIRECTION & VELOCITY → : .25 in. = 1 fps  
 STRUCTURES —  
 DAYMARK ★

Figure B-6 General Current Velocity and Direction Patterns - River Mile 733.95 - 735.10



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 735.10 - 736.15

CURRENT DIRECTION & VELOCITY

SCALE: 1 in. = 630 ft.

CURRENT DIRECTION & VELOCITY  $\longleftrightarrow$  : .25 in. = 1 f.p.s.

STRUCTURES —

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Figure B-7 General Current Velocity and Direction Patterns - River Mile 735.10 - 736.15



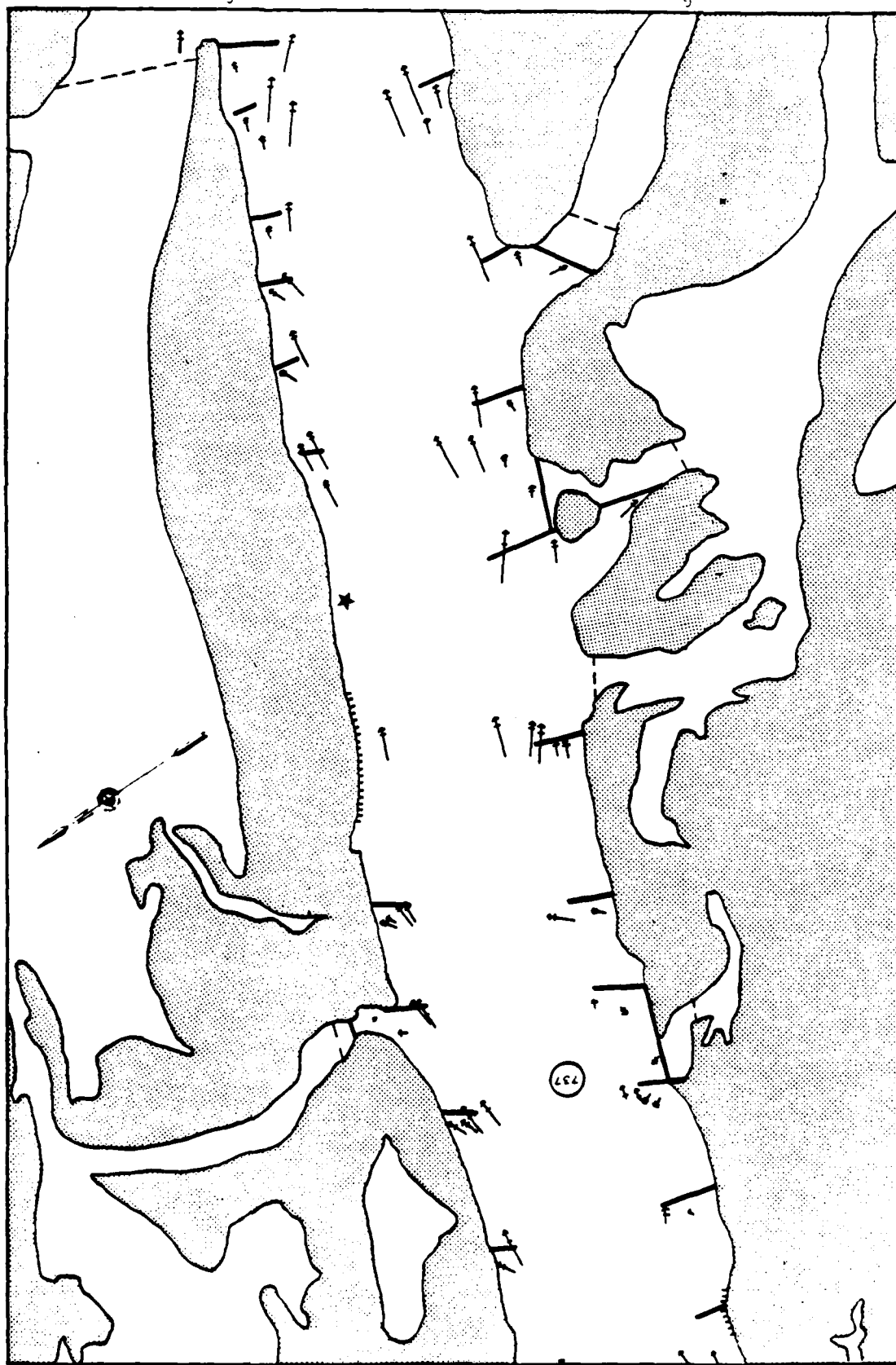
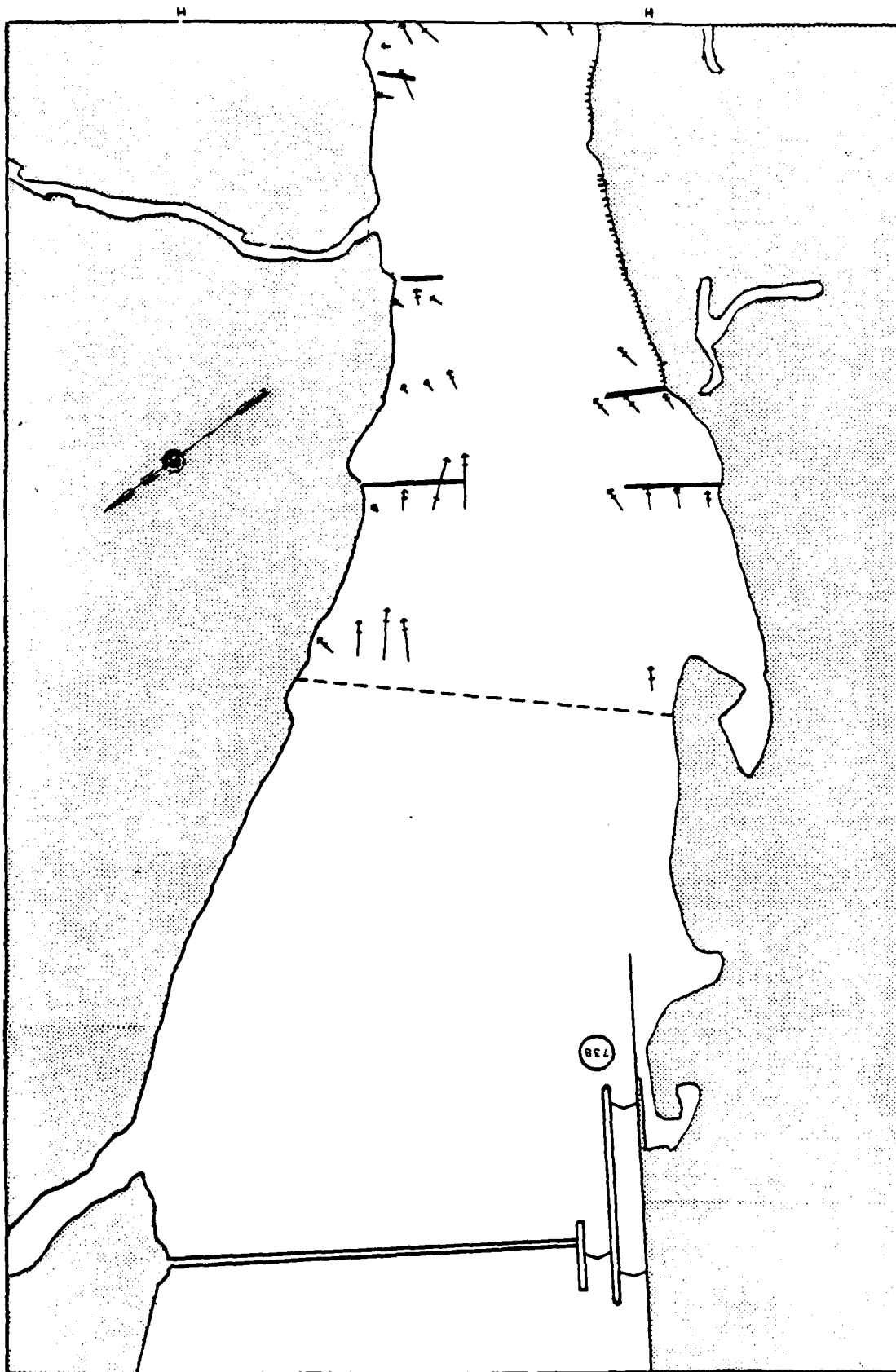


Figure B-8 General Current Velocity and Direction Patterns - River Mile 736.15 - 737.25



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 737.25 - 738.25

SCALE: 1 in. = 630 ft.

CURRENT DIRECTION & VELOCITY

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CURRENT DIRECTION & VELOCITY → .25 in. = 1 fps

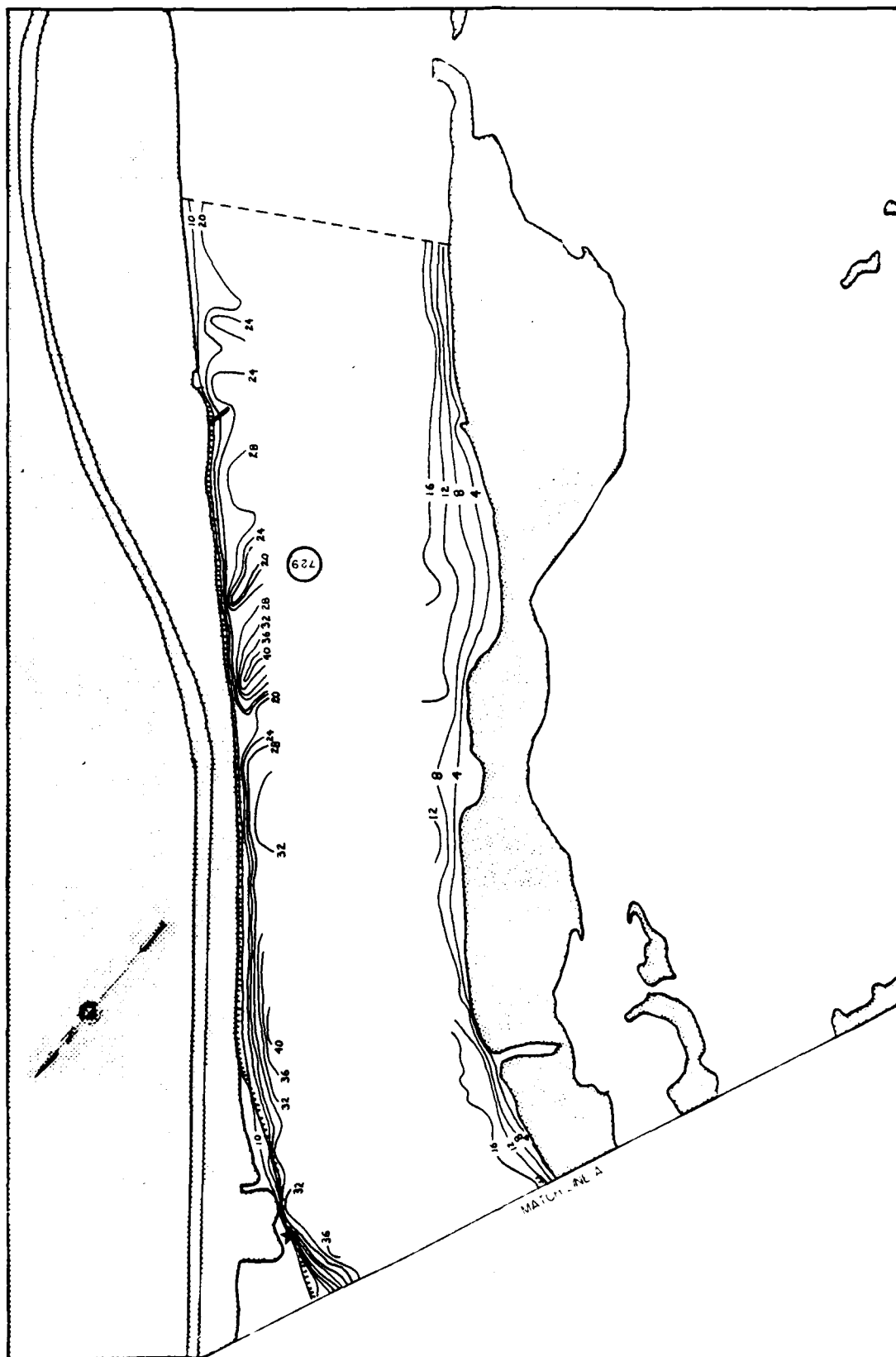
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Figure B-9 General Current Velocity and Direction Patterns - River Mile 737.25 - 738.25

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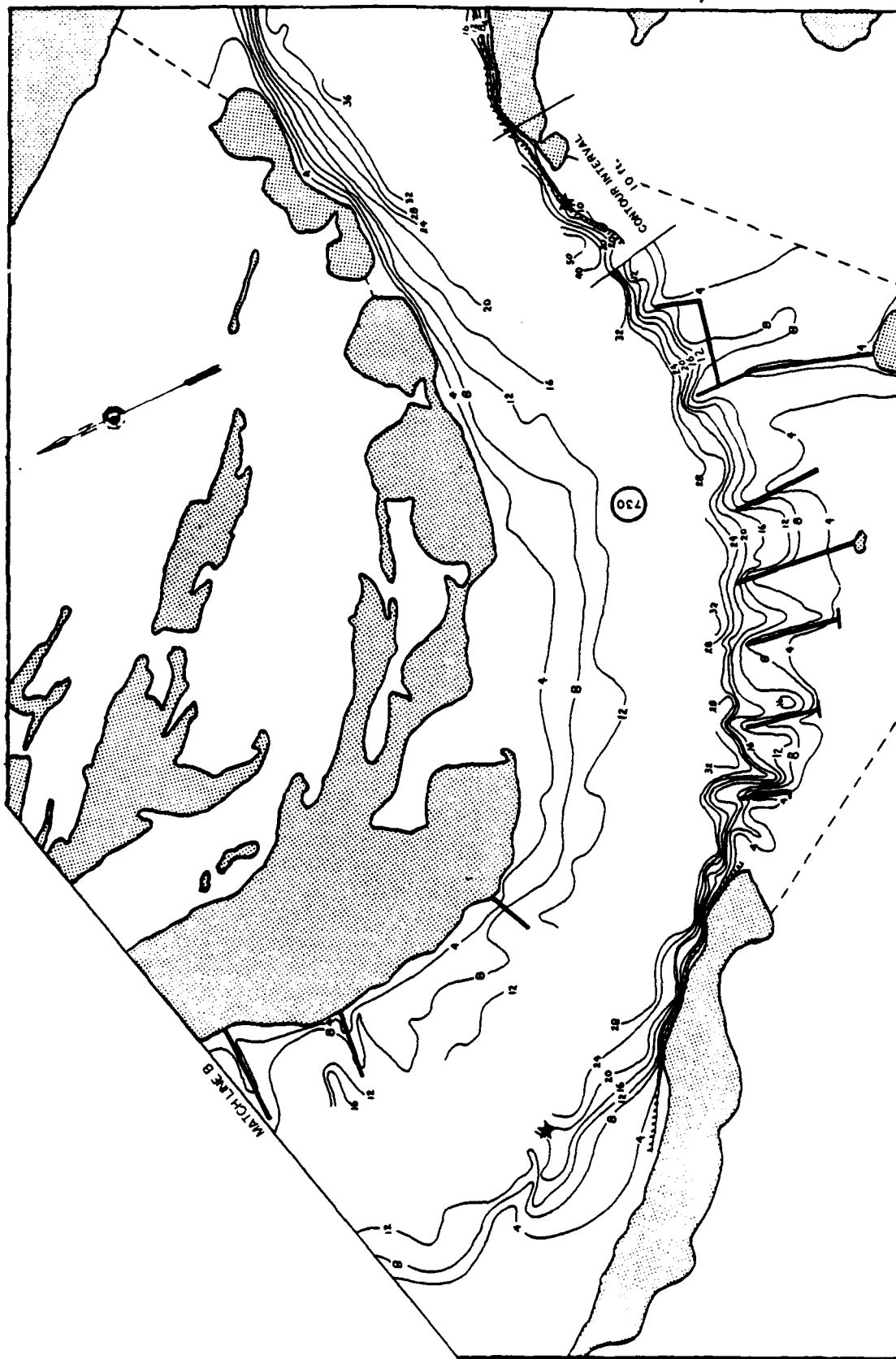
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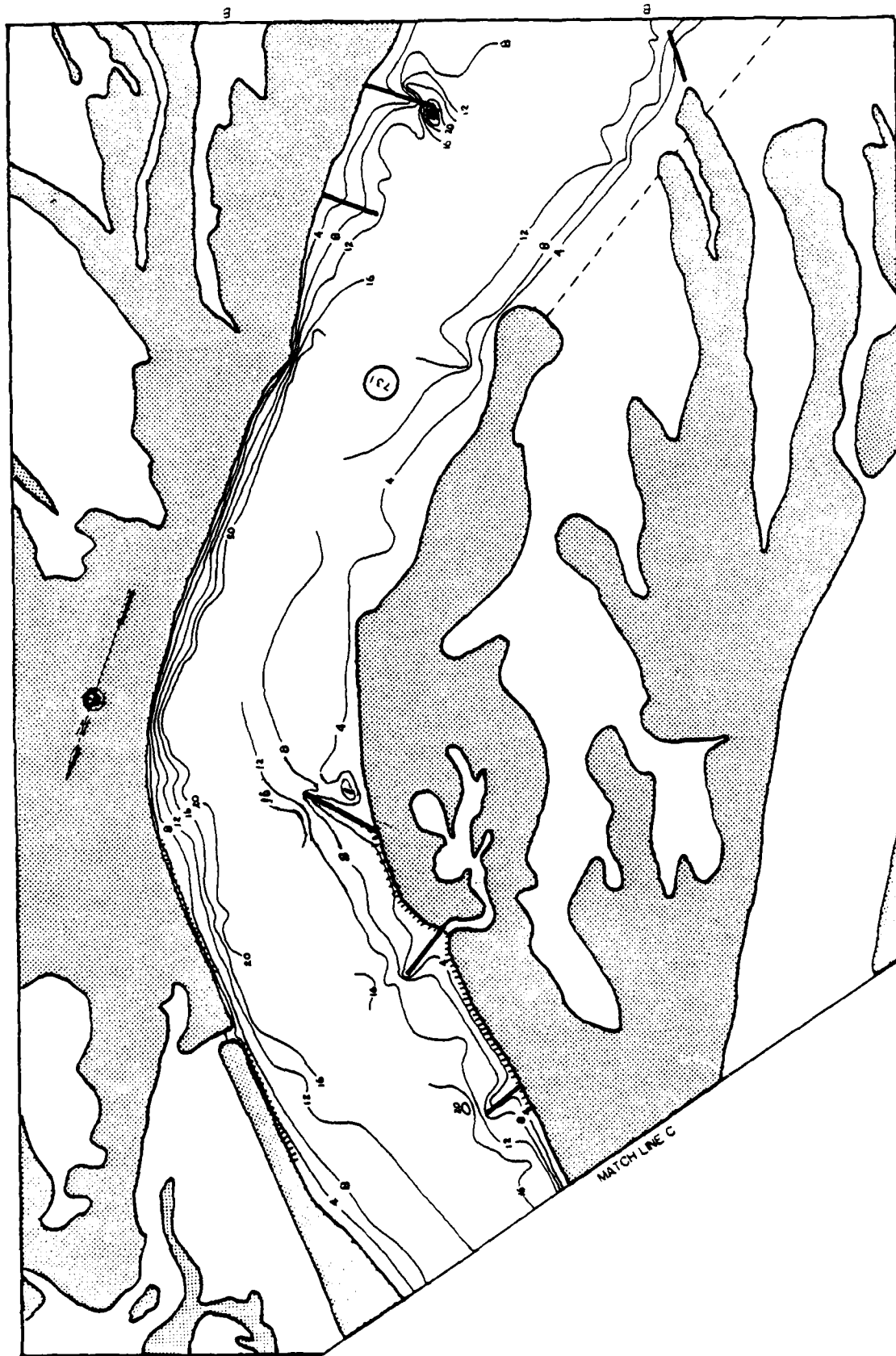
MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 728.55 - 729.55  
 SCALE: 1 in. = 630 ft. BATHYMETRIC MAP  
 STRUCTURES — DAYMARK ★

Figure C-1 General Bathymetric Map River Mile 728.55 - 729.55



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 729.55 - 730.65  
 SCALE: 1 in. = 630 ft. BATHYMETRIC MAP STRUCTURES — DAYMARK ★

Figure C-2 General Bathymetric Map River Mile 729.55 - 730.65



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 730.65 - 731.75

BATHYMETRIC MAP

SCALE: 1 in. = 630 ft.

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Figure C-3 General Bathymetric Map River Mile 730.65 - 731.75



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 731.75 - 732.80

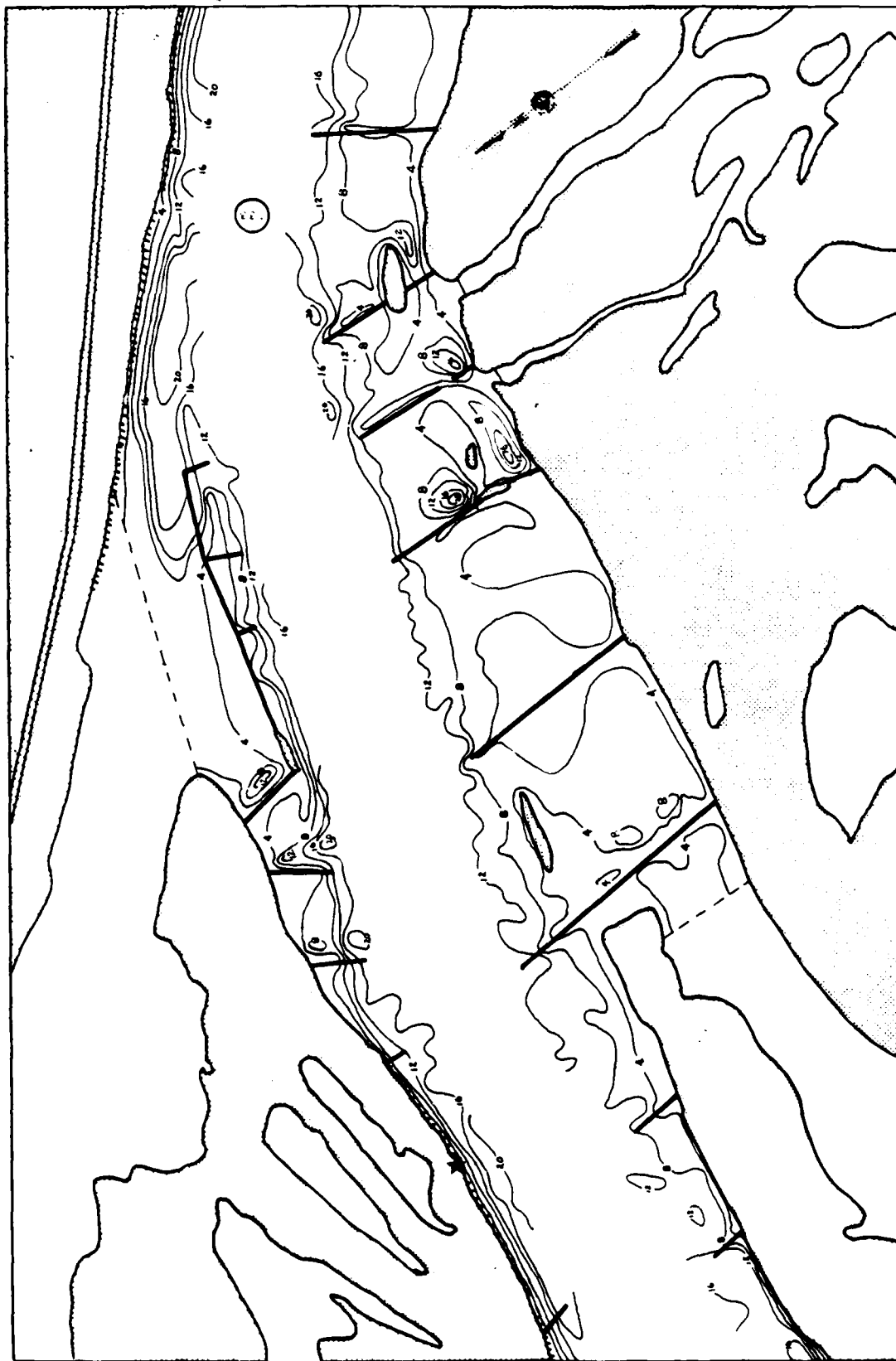
BATHYMETRIC MAP

SCALE: 1 in. = 630 ft.

STRUCTURES —

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Figure C-4 General Bathymetric Map River Mile 731.75 - 732.80



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 732.80 - 733.95  
 SCALE: 1 in. = 630 ft. BATHYMETRIC MAP  
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Figure C-5 General Bathymetric Map River Mile 732.80 - 733.95





MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 733.95 - 735.10

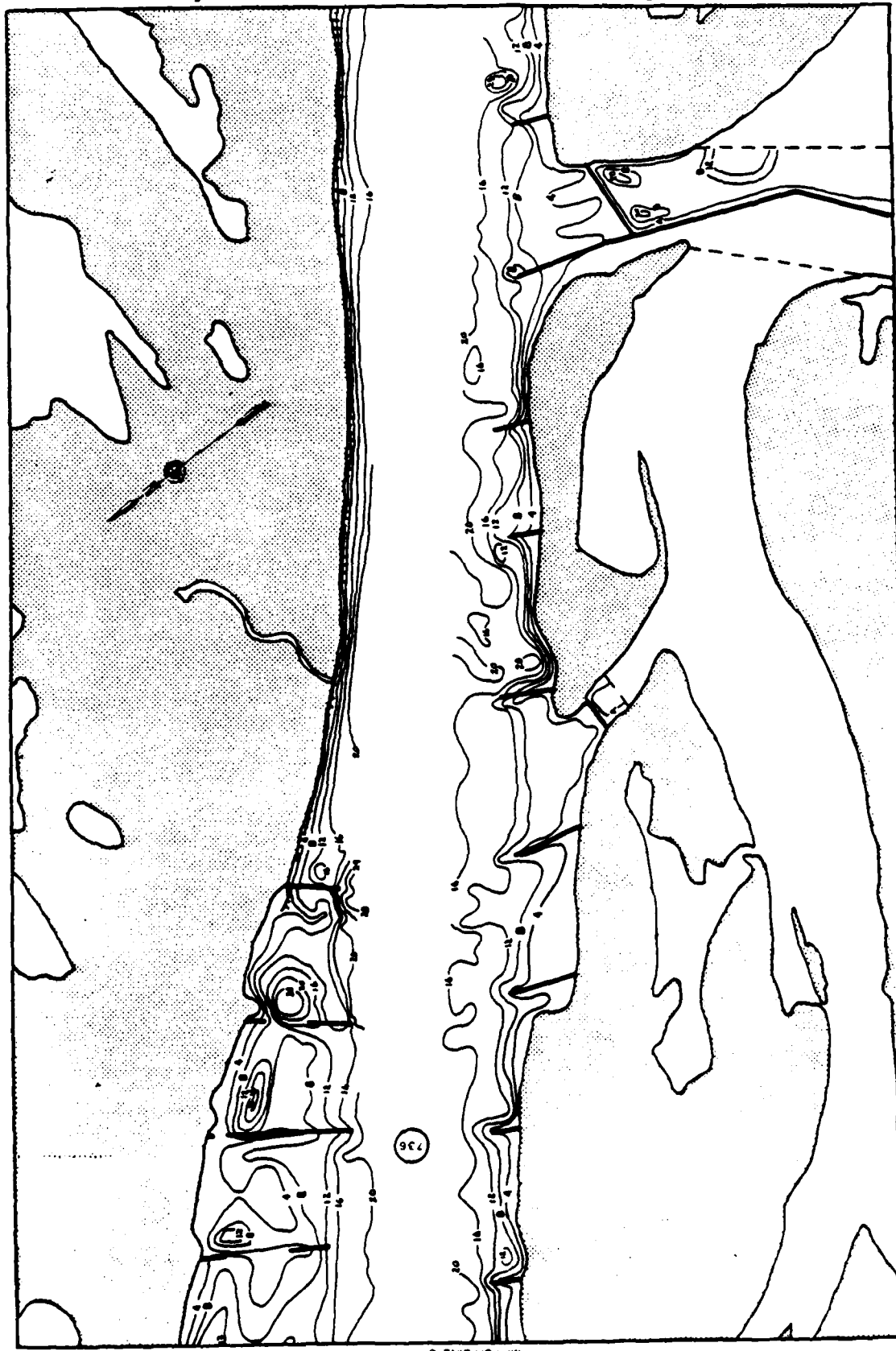
BATHYMETRIC MAP

SCALE: 1 in. = 630 ft.

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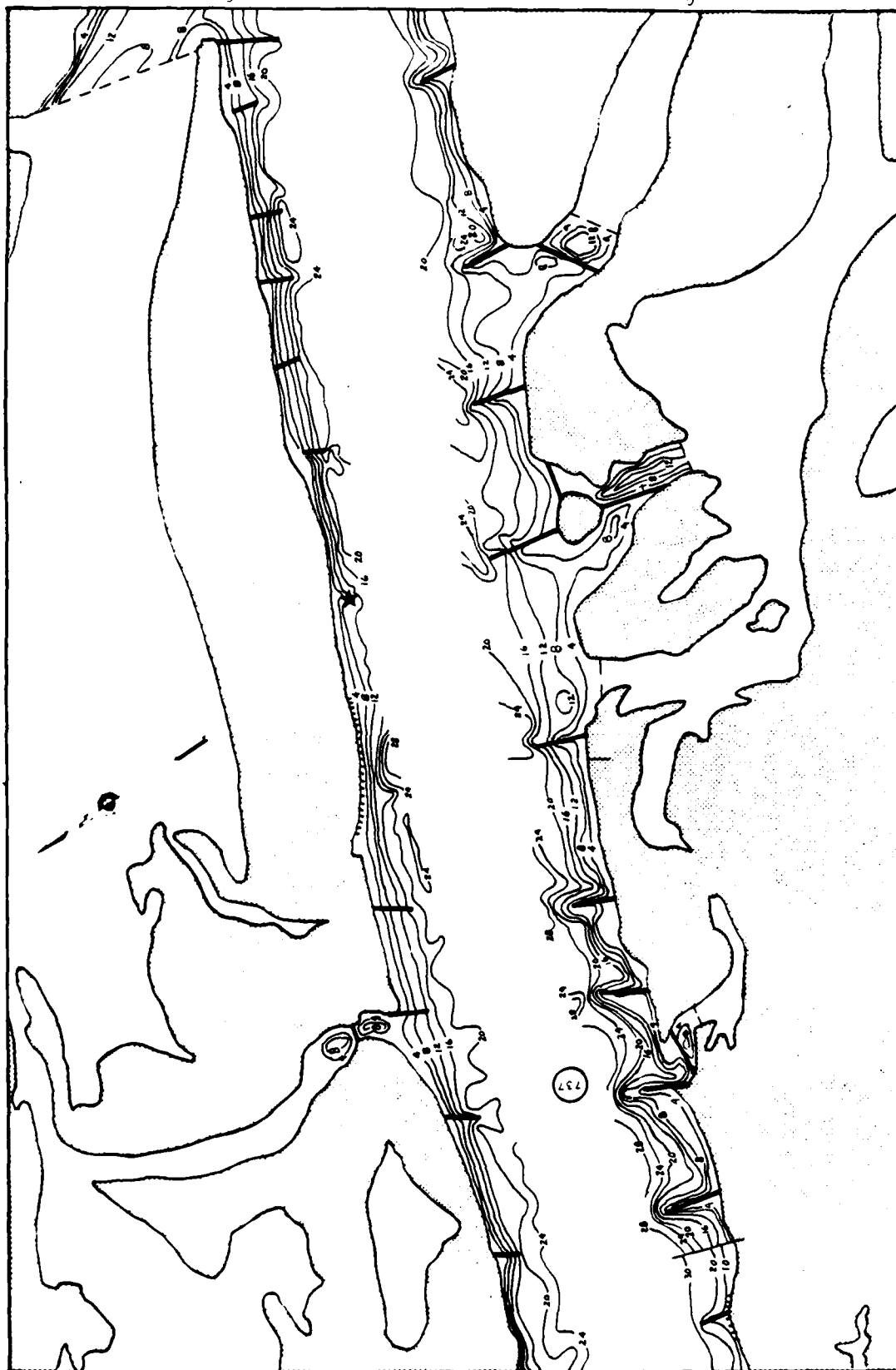
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Figure C-6 General Bathymetric Map River Mile 733.95 - 735.10



MAIN CHANNEL BORDER STUDY      POOL 5A      RIVER MILE: 735.10 - 736.15  
 BATHYMETRIC MAP  
 SCALE: 1 in. = 630 ft.  
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Figure C-7 General Bathymetric Map River Mile 735.10 - 736.15



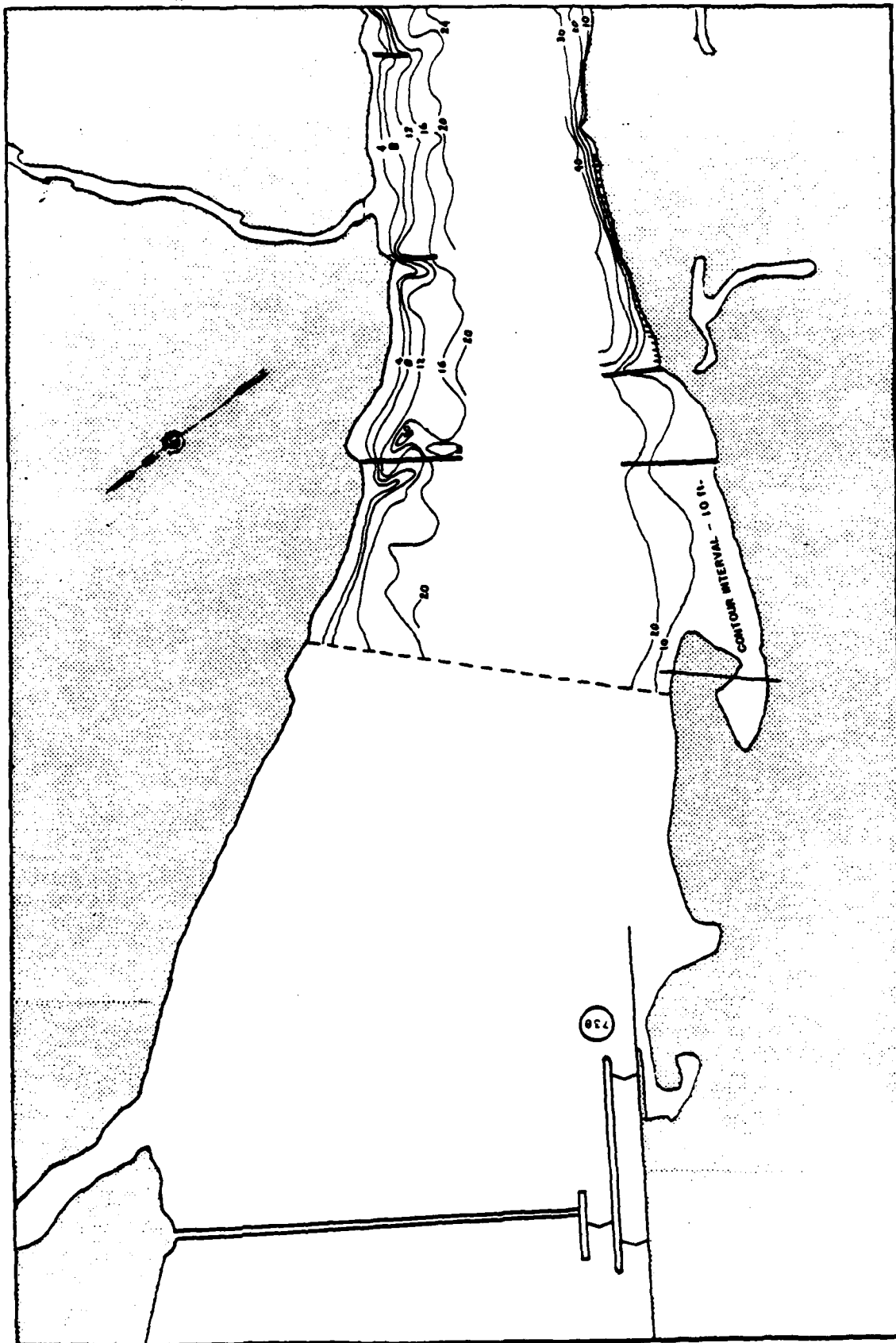
MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 736.15 - 737.25  
BATHYMETRIC MAP

SCALE: 1 in. = 630 ft.

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Figure C-8 General Bathymetric Map River Mile 736.15 - 737.25



MAIN CHANNEL BORDER STUDY POOL 5A RIVER MILE: 737.25 - 738.25  
 BATHYMETRIC MAP  
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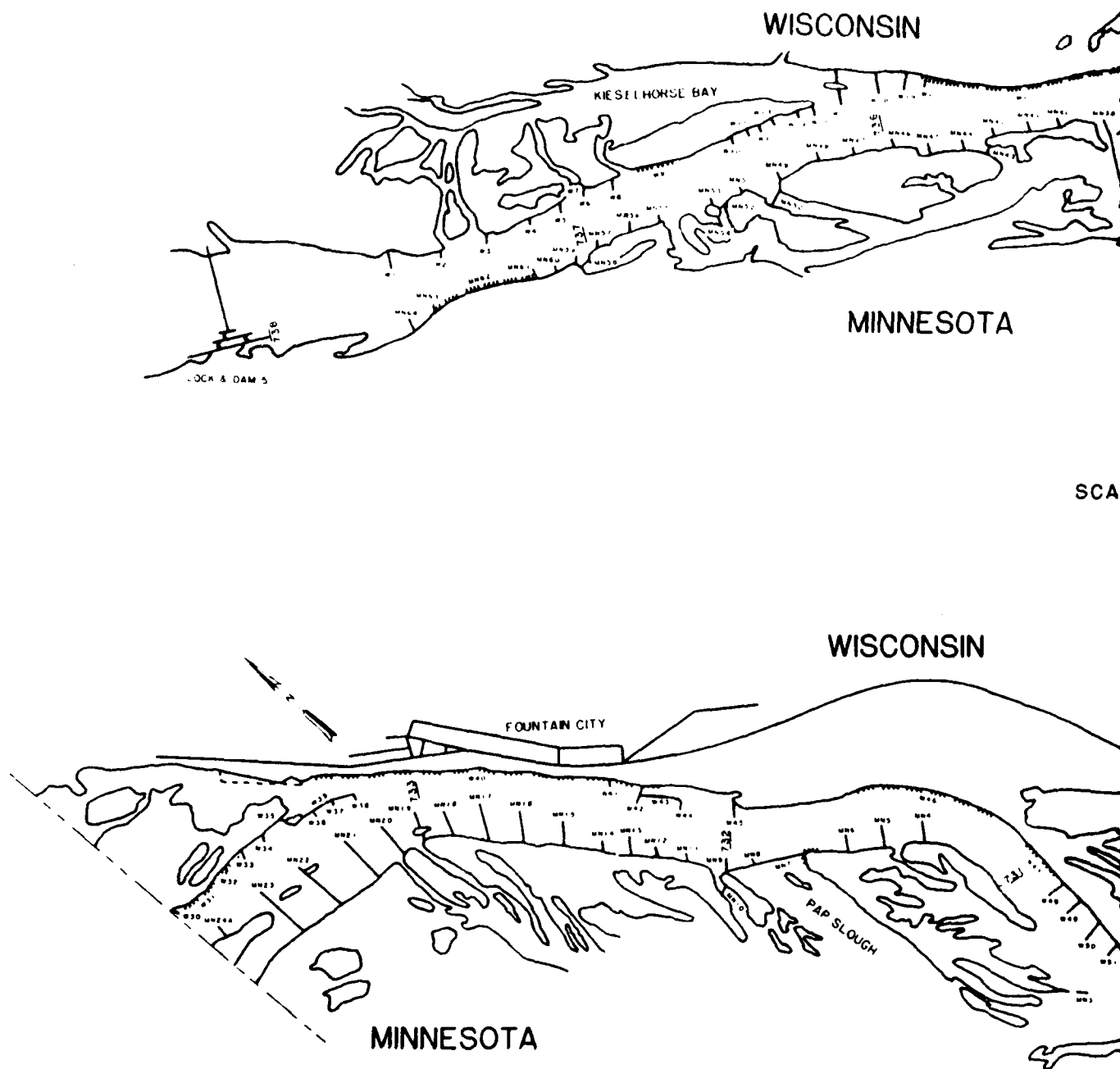
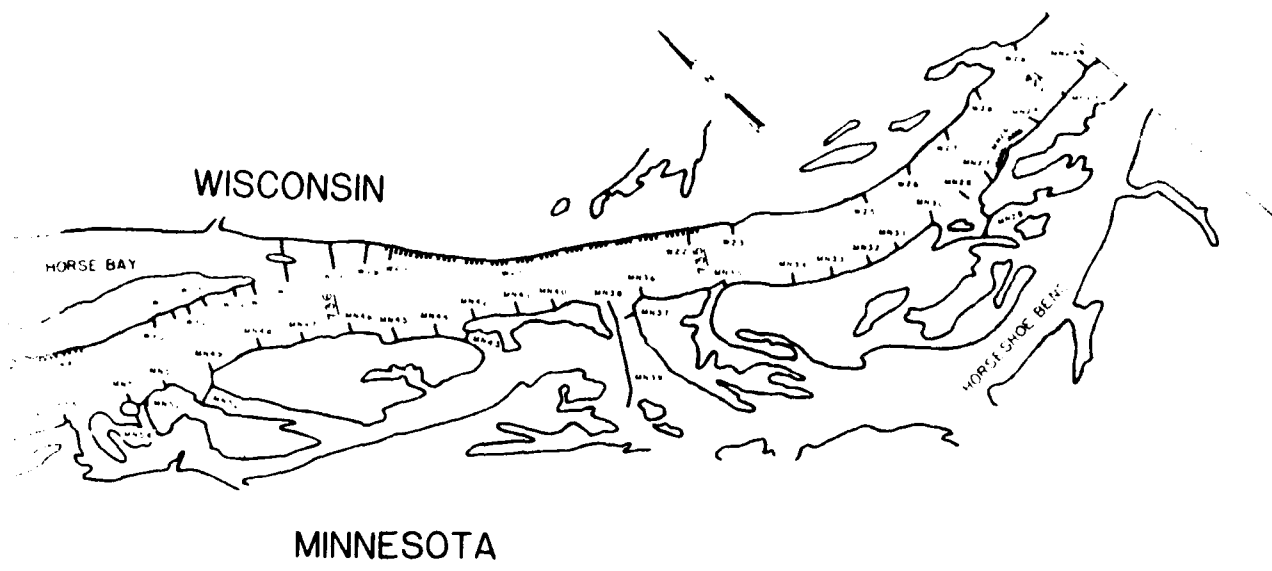
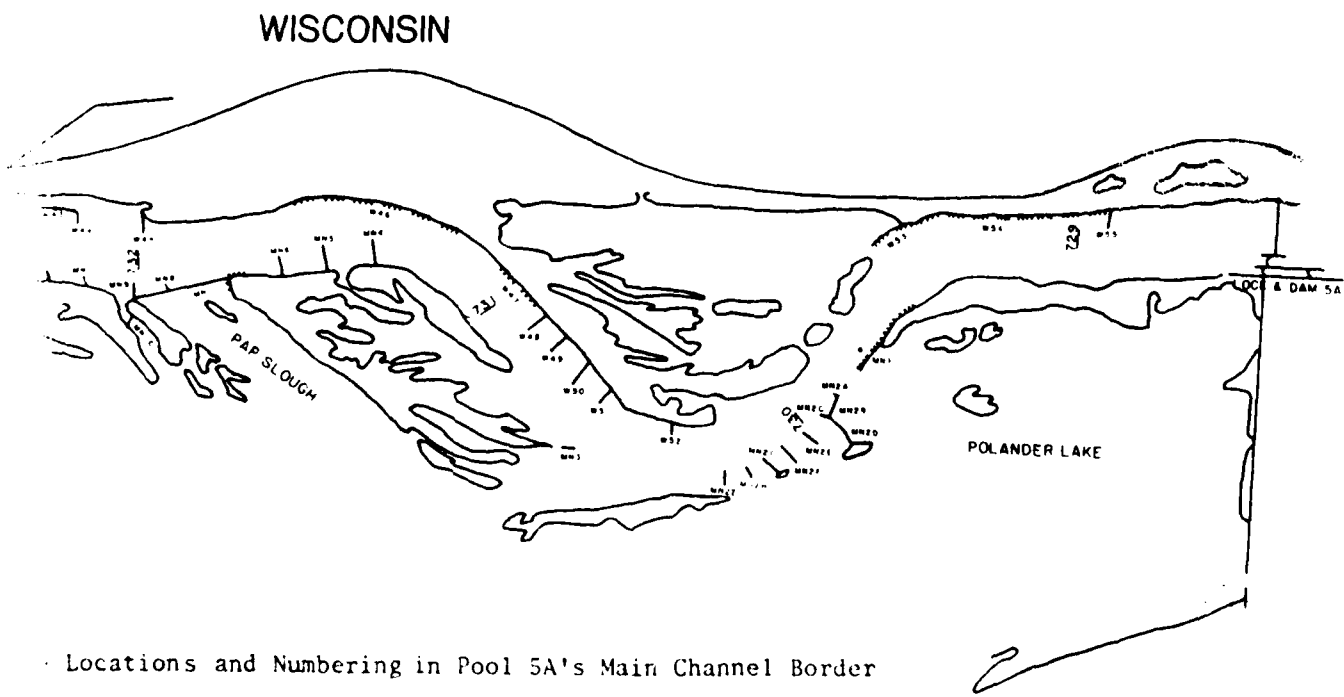


Figure D-1 General Map of Rock Control Structure Locations and Numbering in Pool SA's M



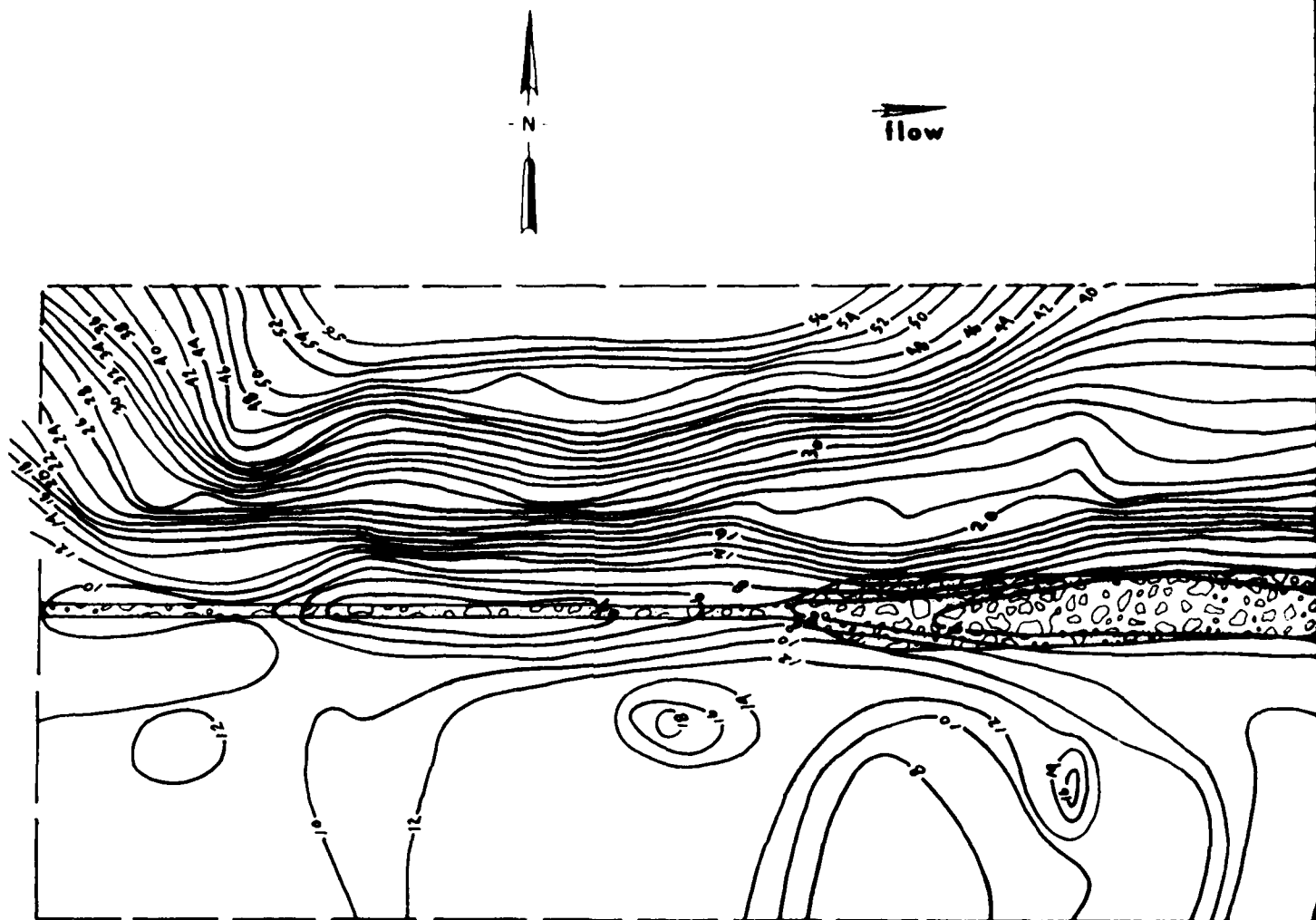


SCALE: 1 in. = 2,400 ft.



Locations and Numbering in Pool 5A's Main Channel Border

3012

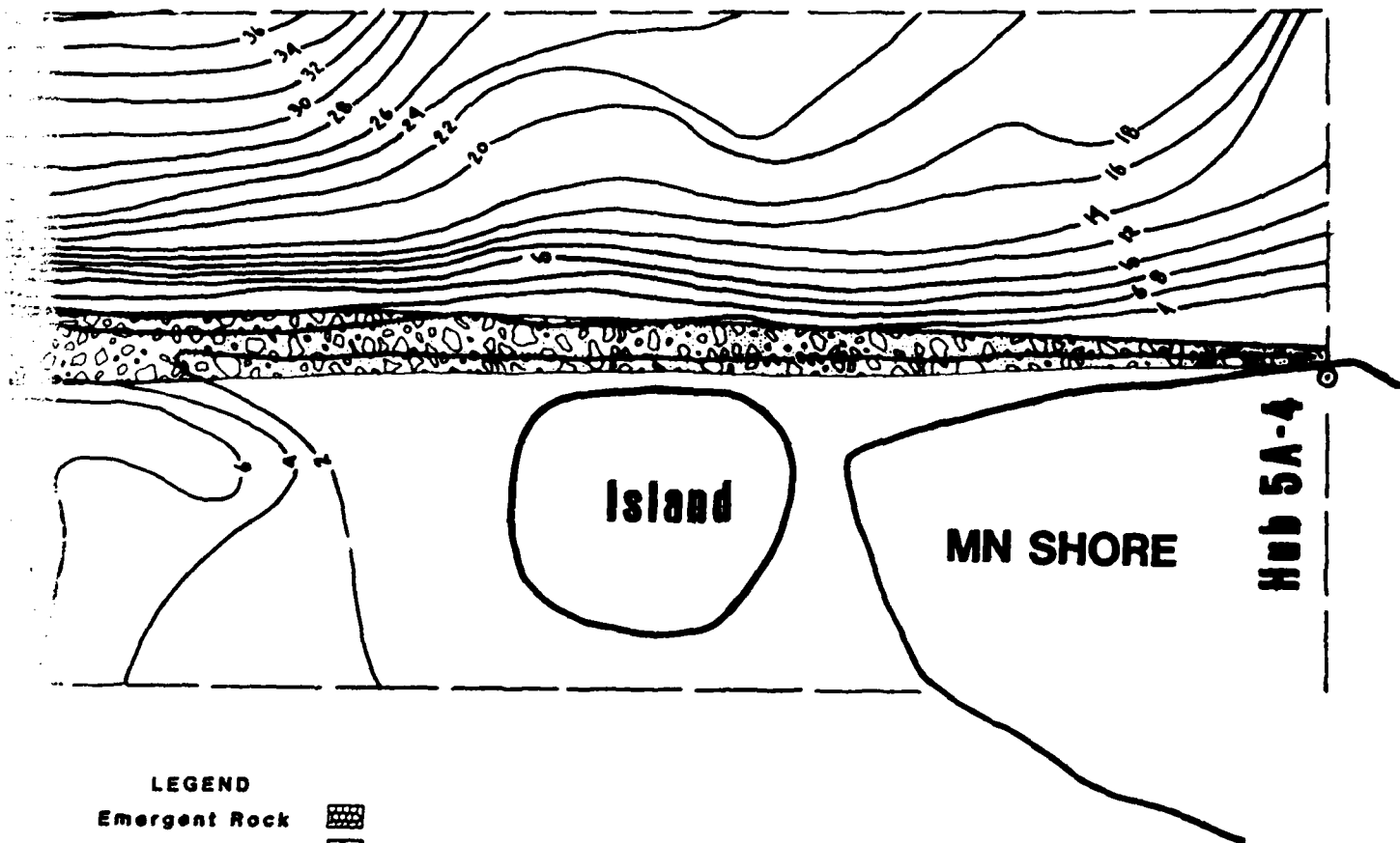





**M 1**

**Polander Lake**

Figure D-2 General Bathymetric and Substrate Map of Wing Dam M1

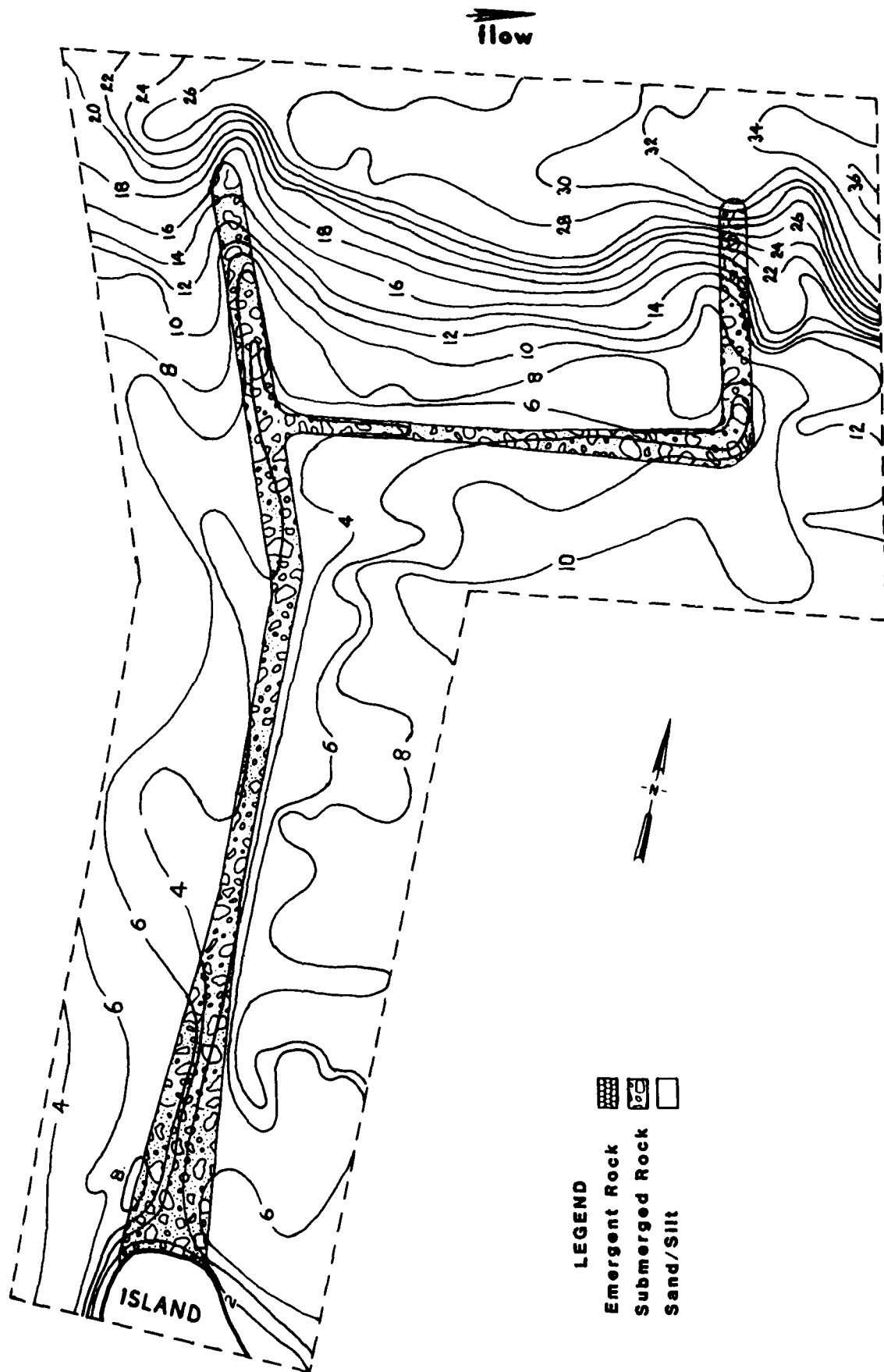
10/2



**LEGEND**  
 Emergent Rock   
 Submerged Rock   
 Sand/Silt 

1" = 50'

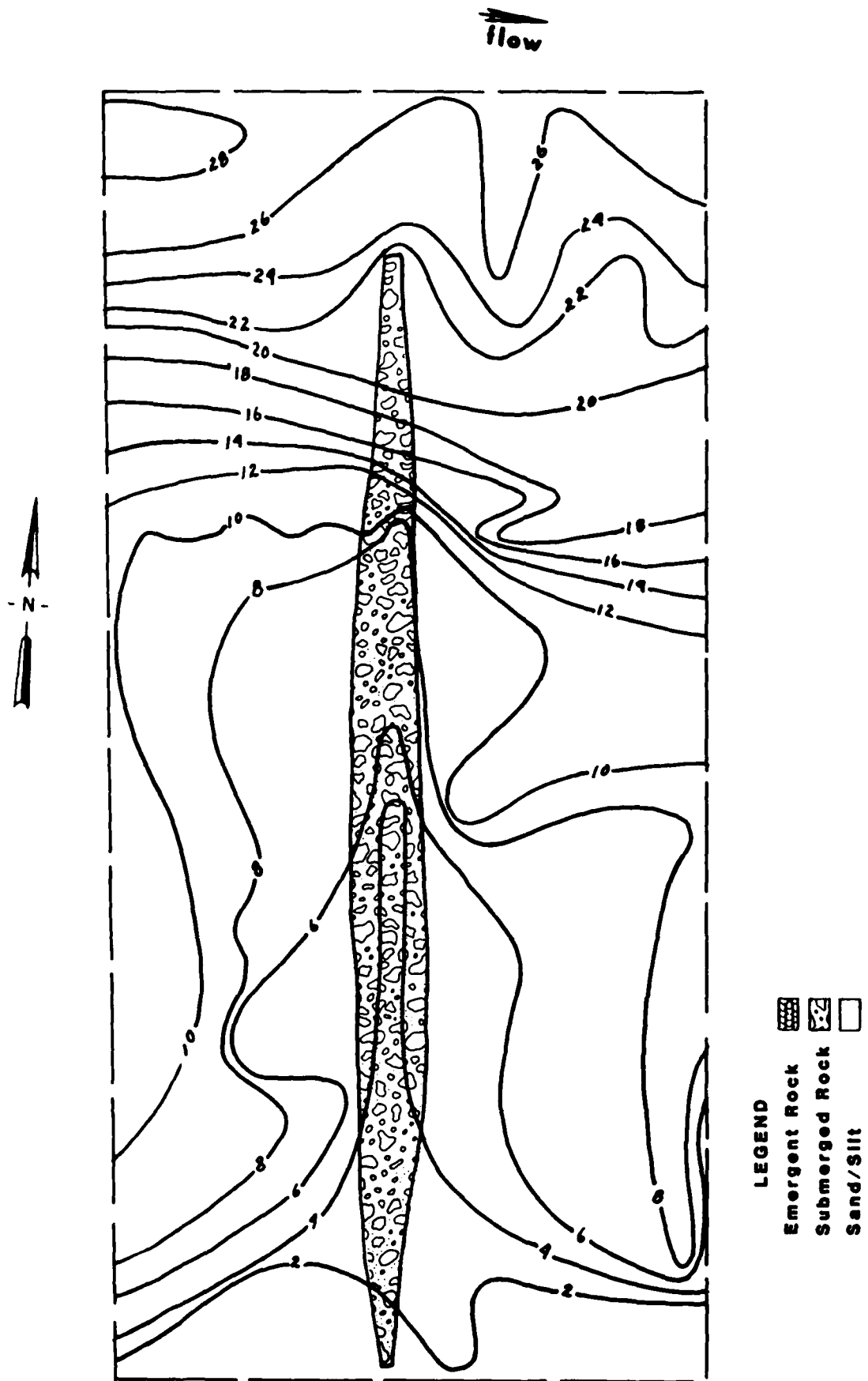
25  
 521-



1" = 100'

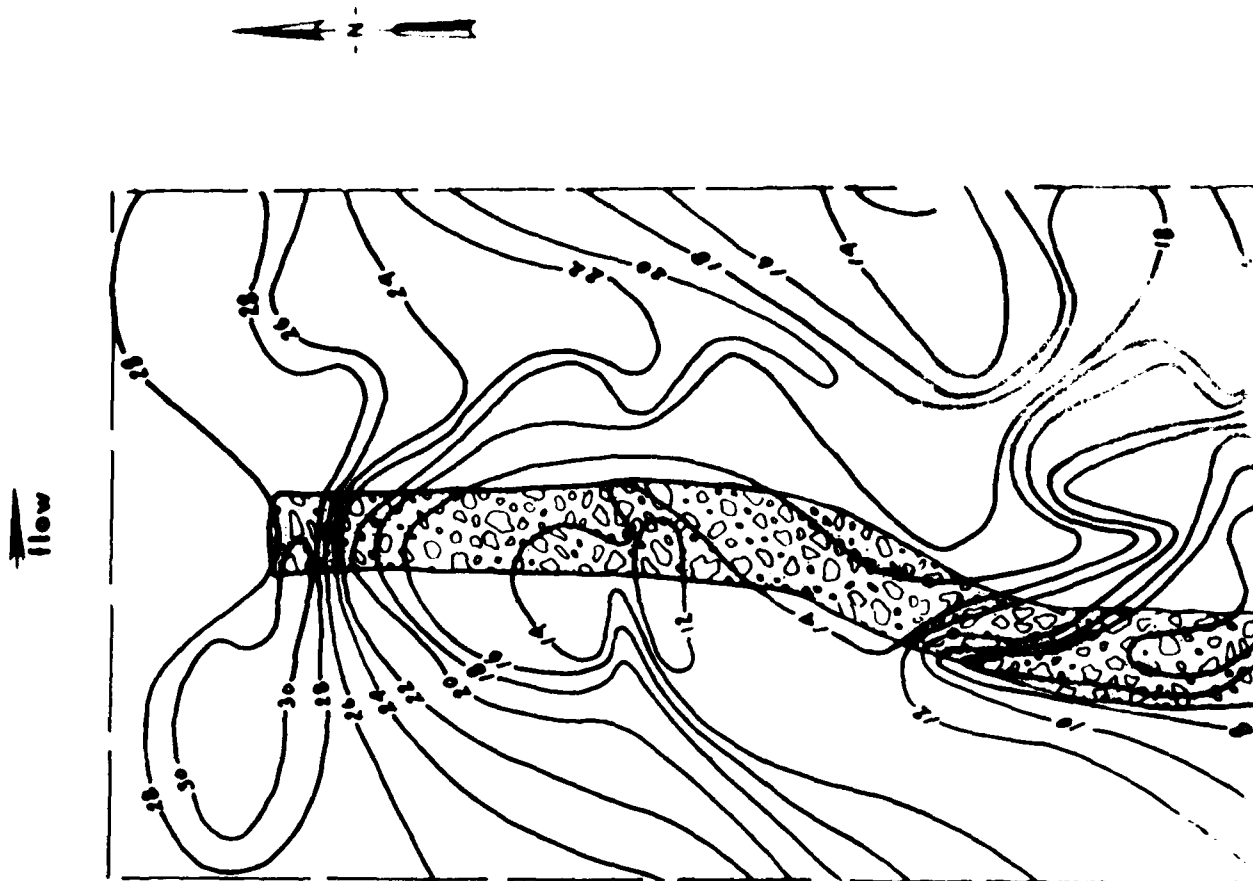
**M 2A,B,C,D**

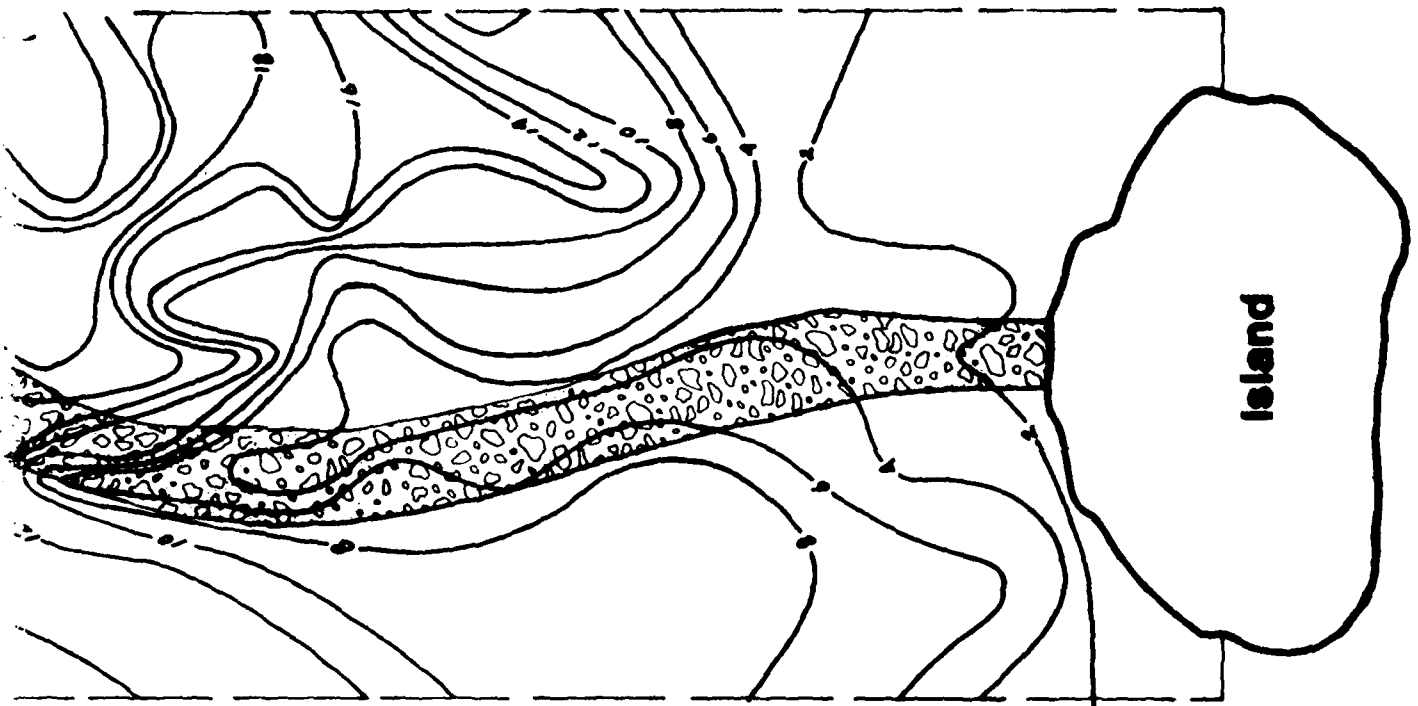
Figure D-3 General Bathymetric and Substrate Map of Wing Dam M2A, B, D, and Closing Dam C



## M 2E Polander Lake 1" = 50'

Figure D-4 General Bathymetric and Substrate Map of Wing Dam M2E





LEGEND

- |                |   |
|----------------|---|
| Emergent Rock  |  |
| Submerged Rock |  |
| Sand/Silt      |  |

M2F

38

20/12

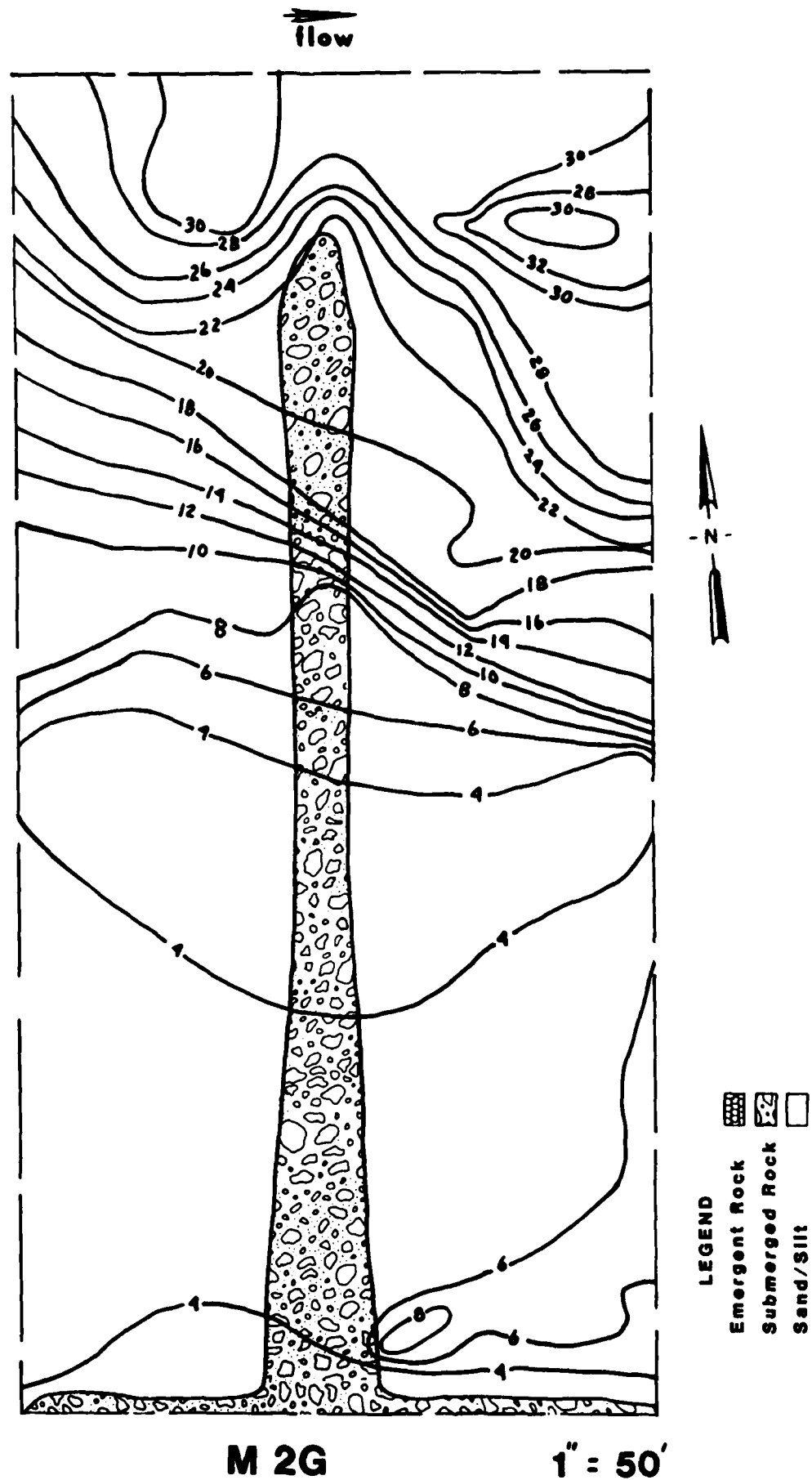


Figure D-6 General Bathymetric and Substrate Map of Wing Dam M2G



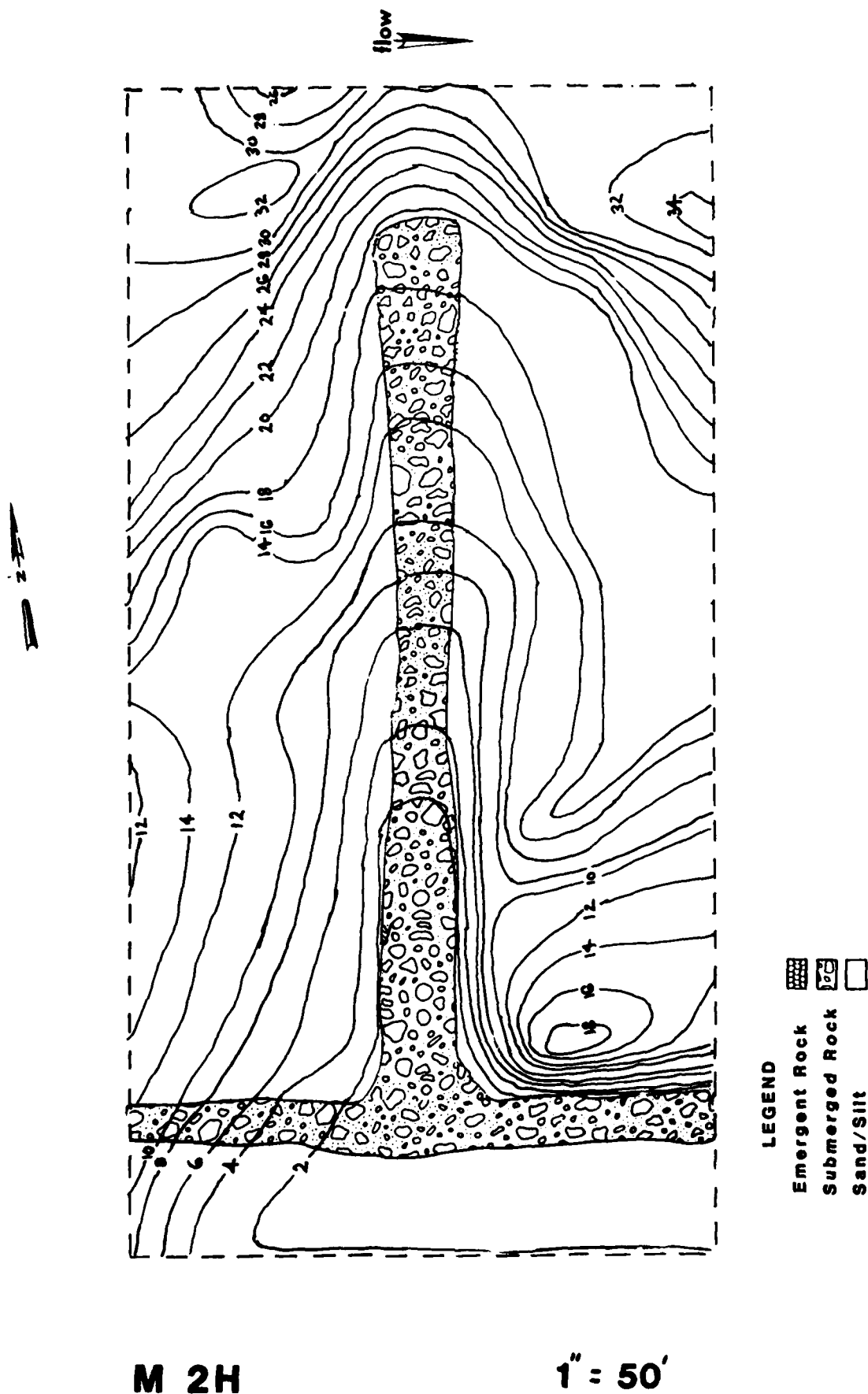
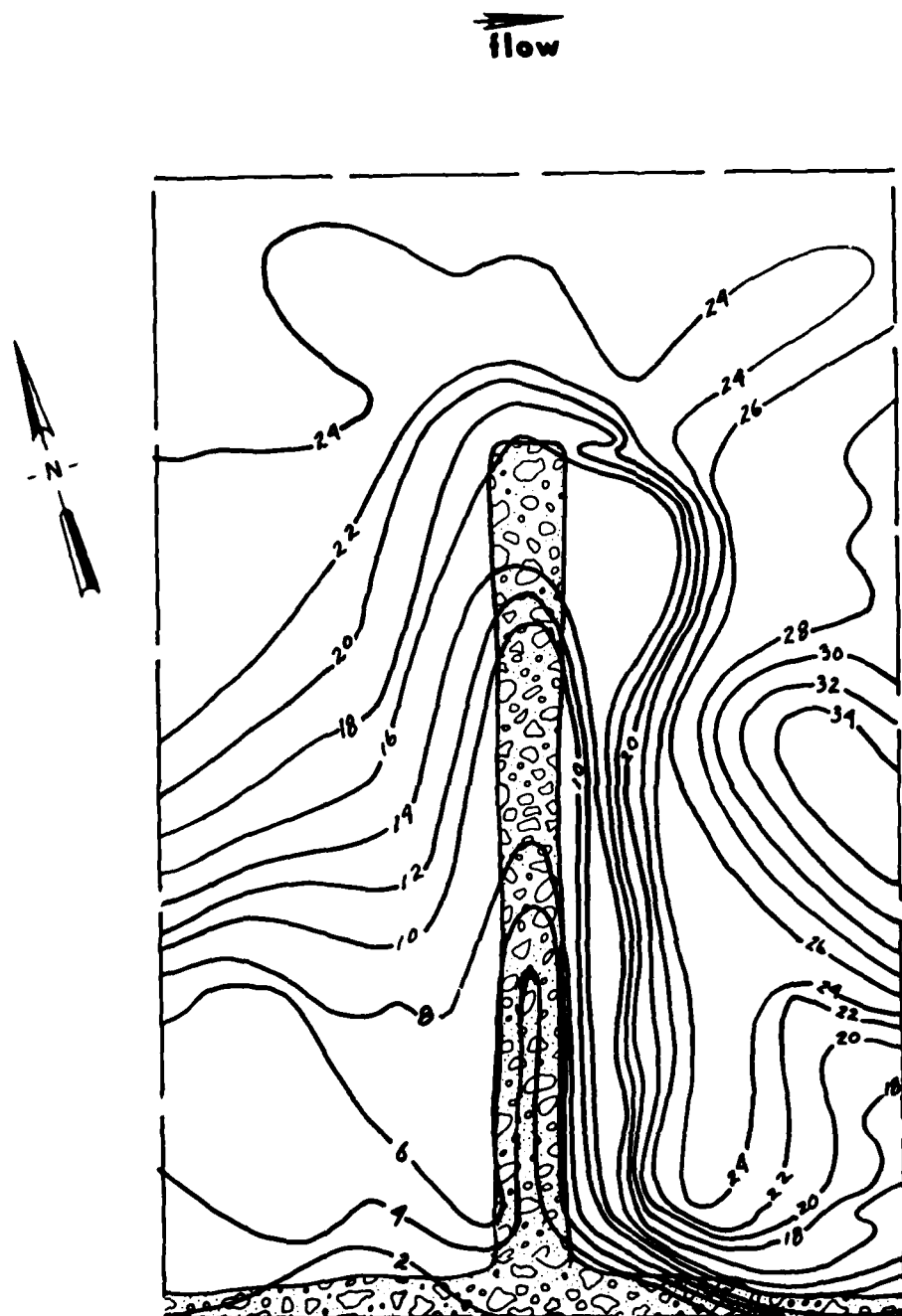


Figure D-7 General Bathymetric and Substrate Map of Wing Dam M2H



**M 2i**

**1" = 50'**

LEGEND	
Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-8 General Bathymetric and Substrate Map of Wing Dam M2I

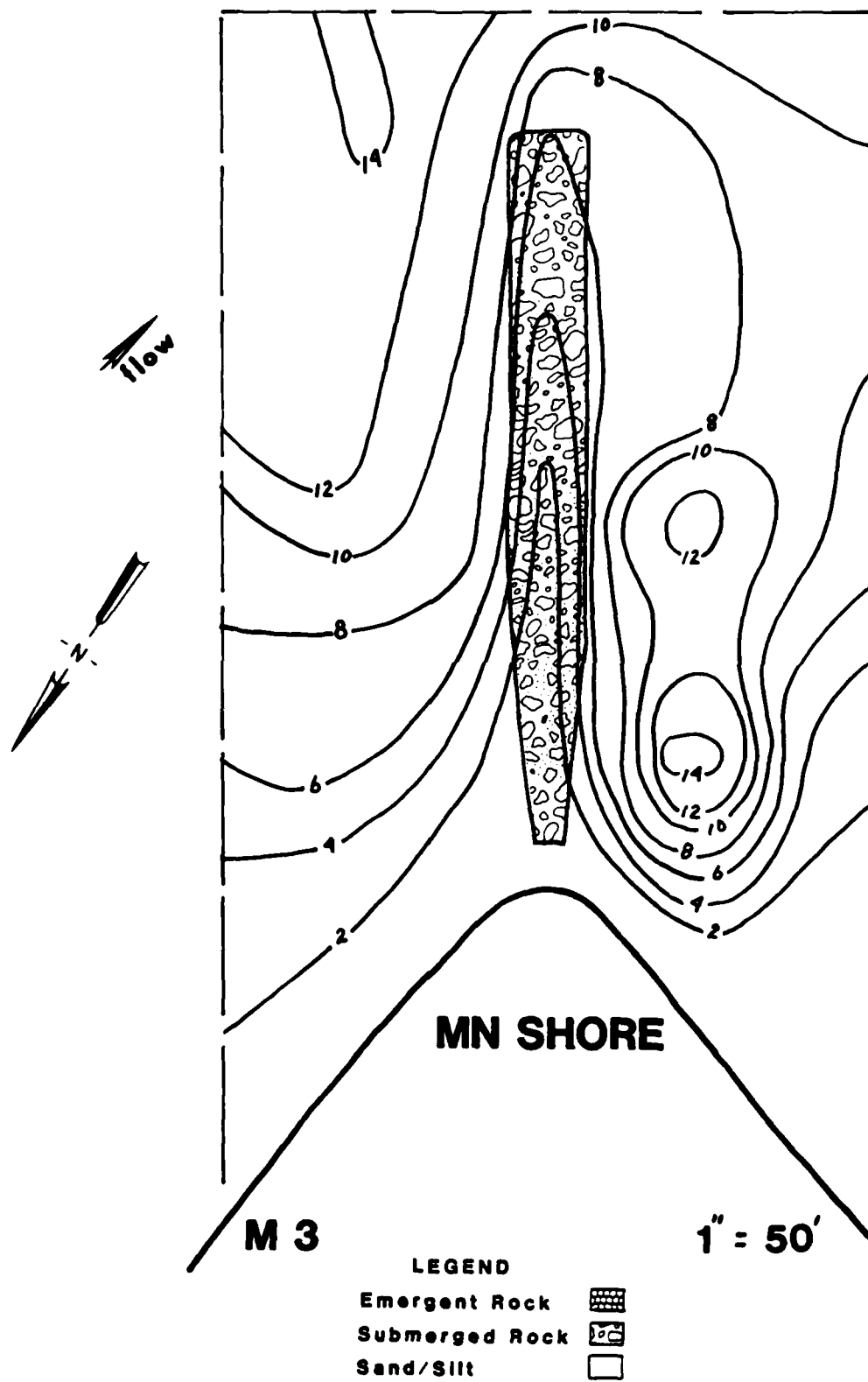


Figure D-9 General Bathymetric and Substrate Map of Wing Dam M3

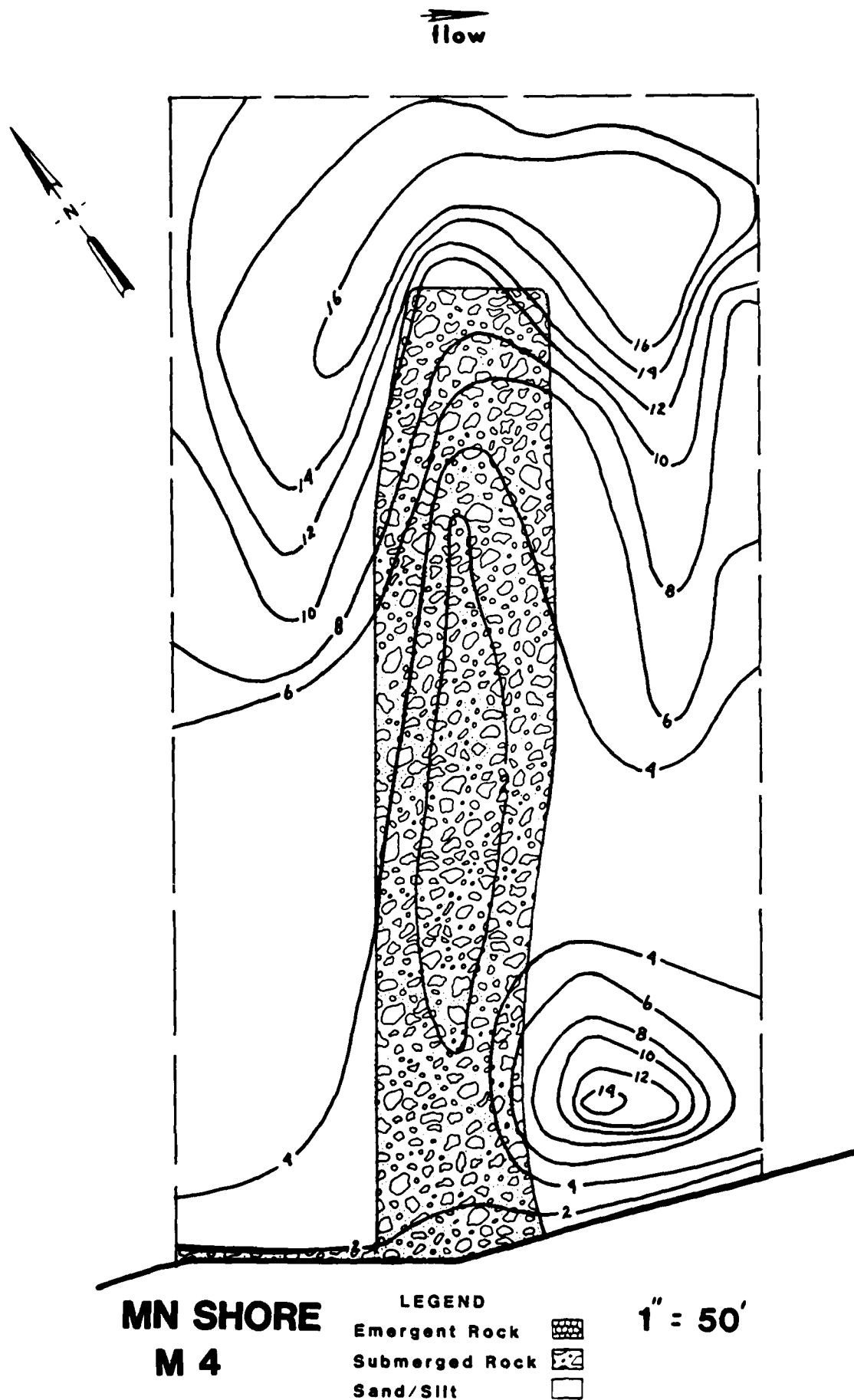
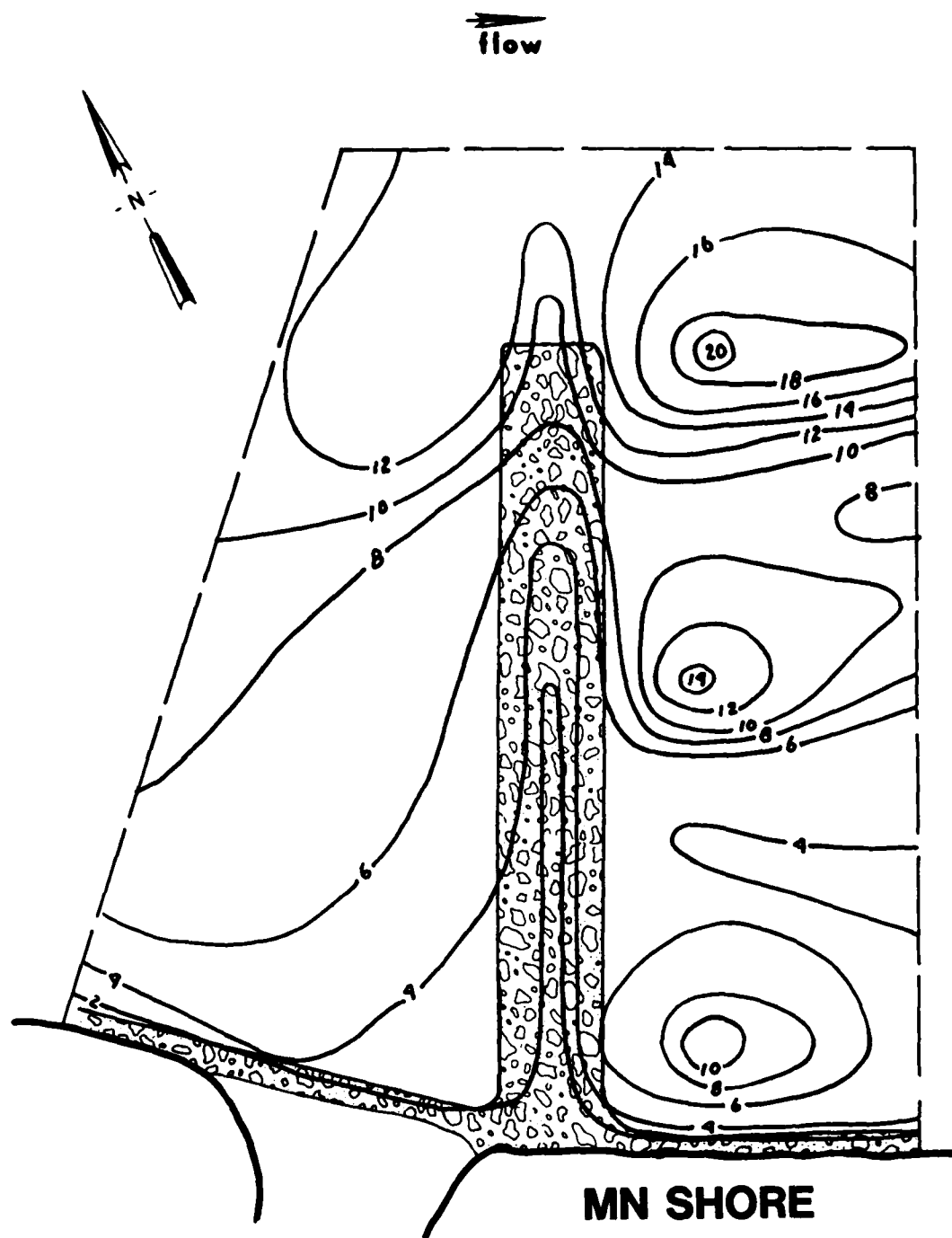


Figure D-10 General Bathymetric and Substrate Map of Wing Dam M4



**M 5**

**LEGEND**

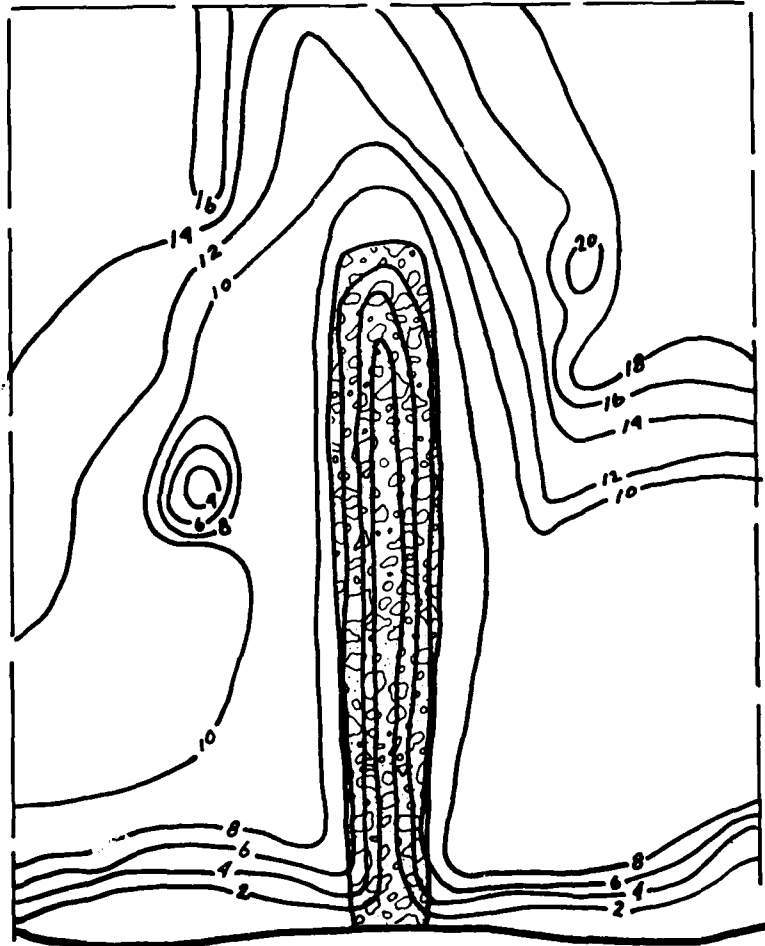
Emergent Rock  
Submerged Rock  
Sand/Silt



**1" = 50'**

Figure D-11 General Bathymetric and Substrate Map of Wing Dam M5

flow



MN SHORE

M 6

LEGEND

Emergent Rock   
Submerged Rock   
Sand/Silt 

1" = 50'

Figure D-12 General Bathymetric and Substrate Map of Wing Dam M6

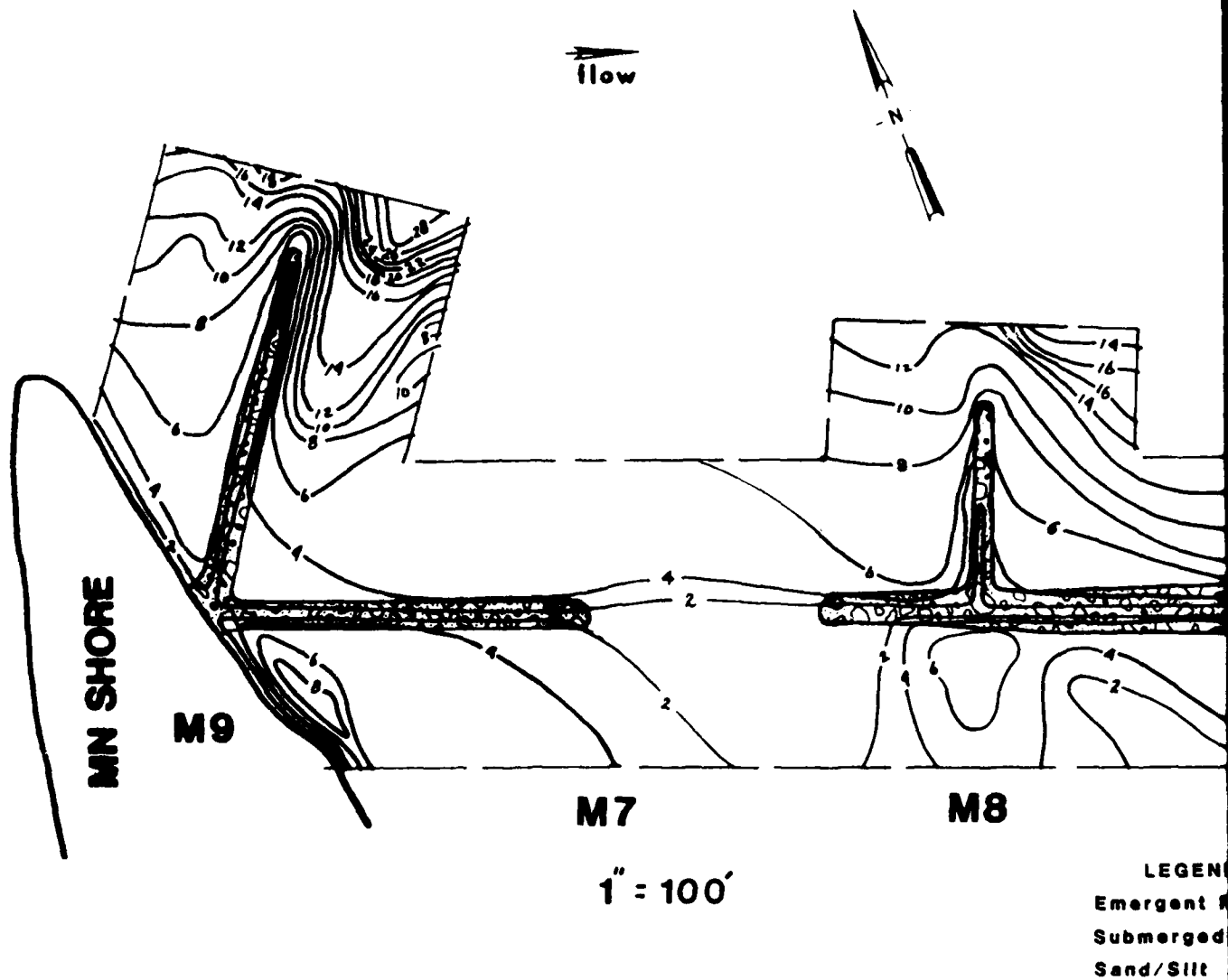
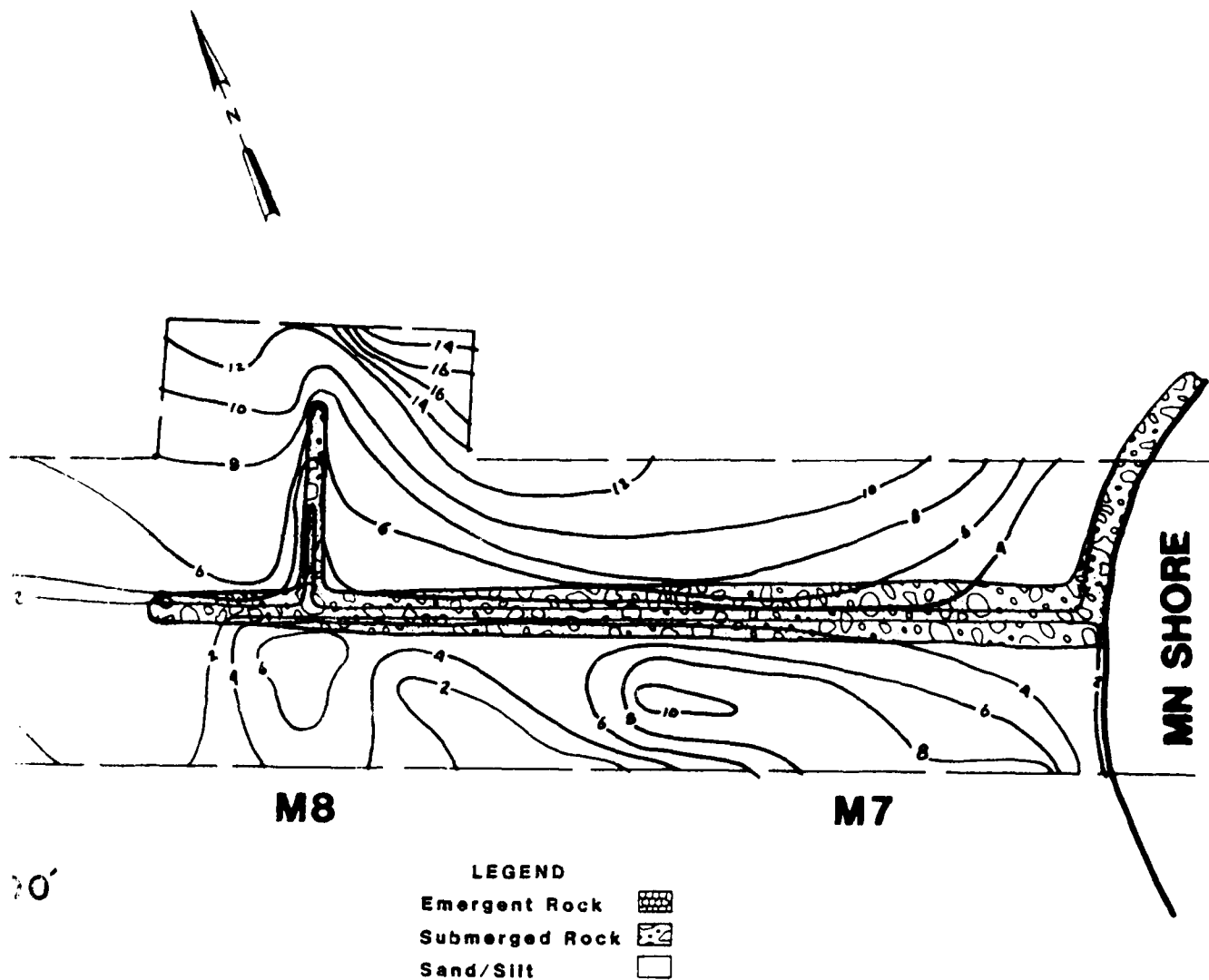


Figure D-13 General Bathymetric and Substrate Map of Closing Dam M7, Wing Dams M8 and M9

*1212*



20'

of Closing Dam M7, Wing Dams M8 and M9

46

200



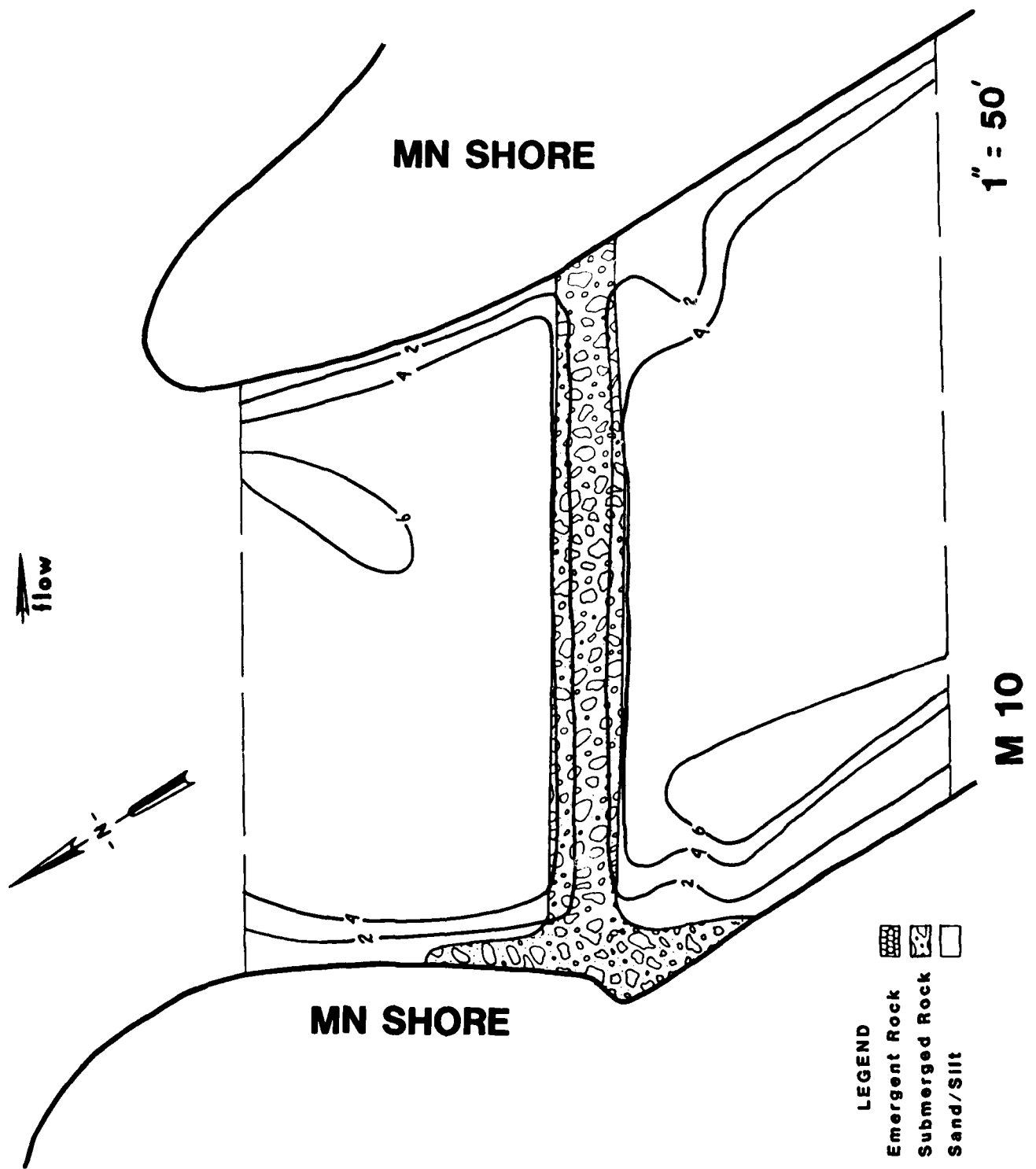


Figure D-14 General Bathymetric and Substrate Map of Closing Dam M10

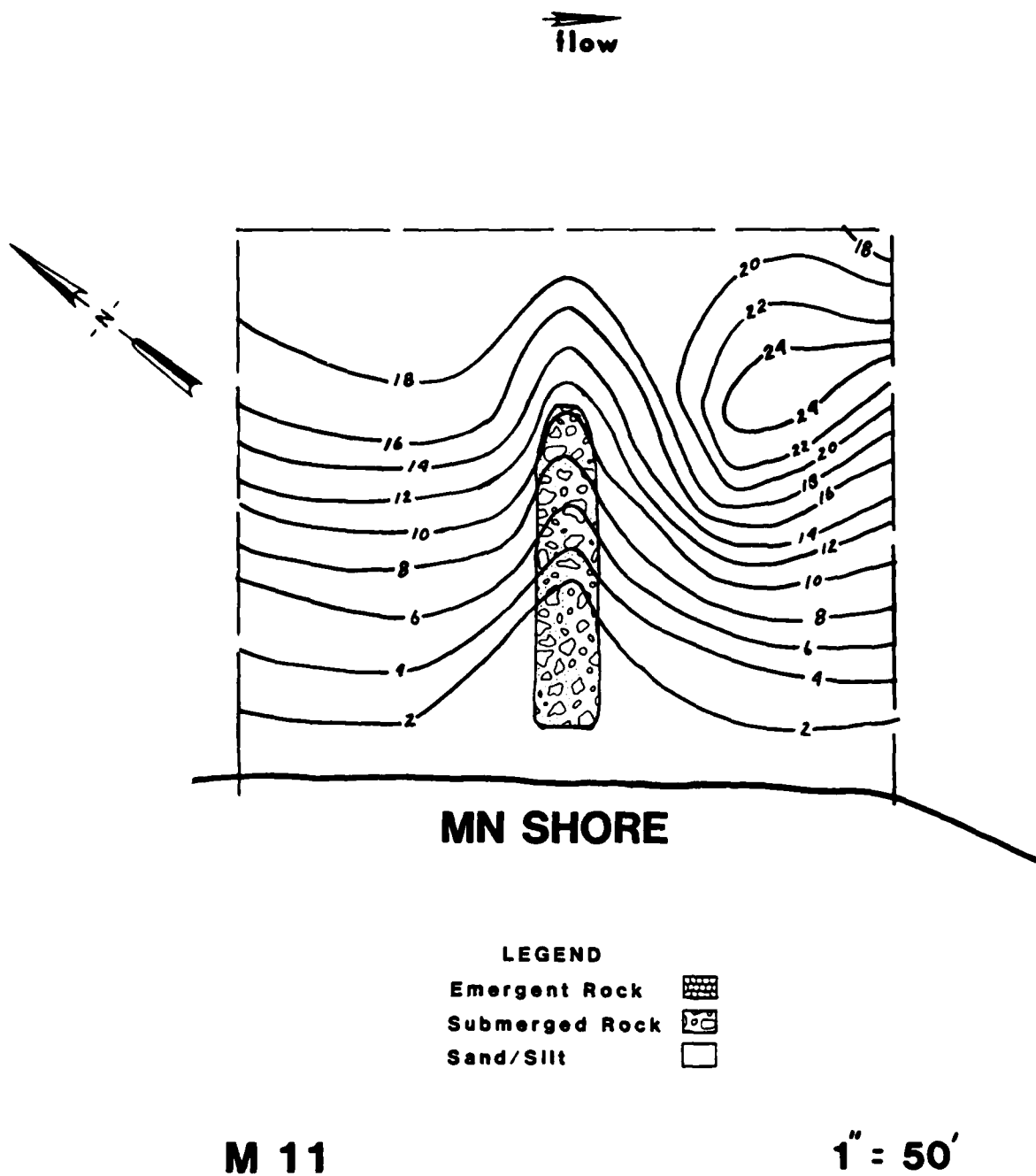
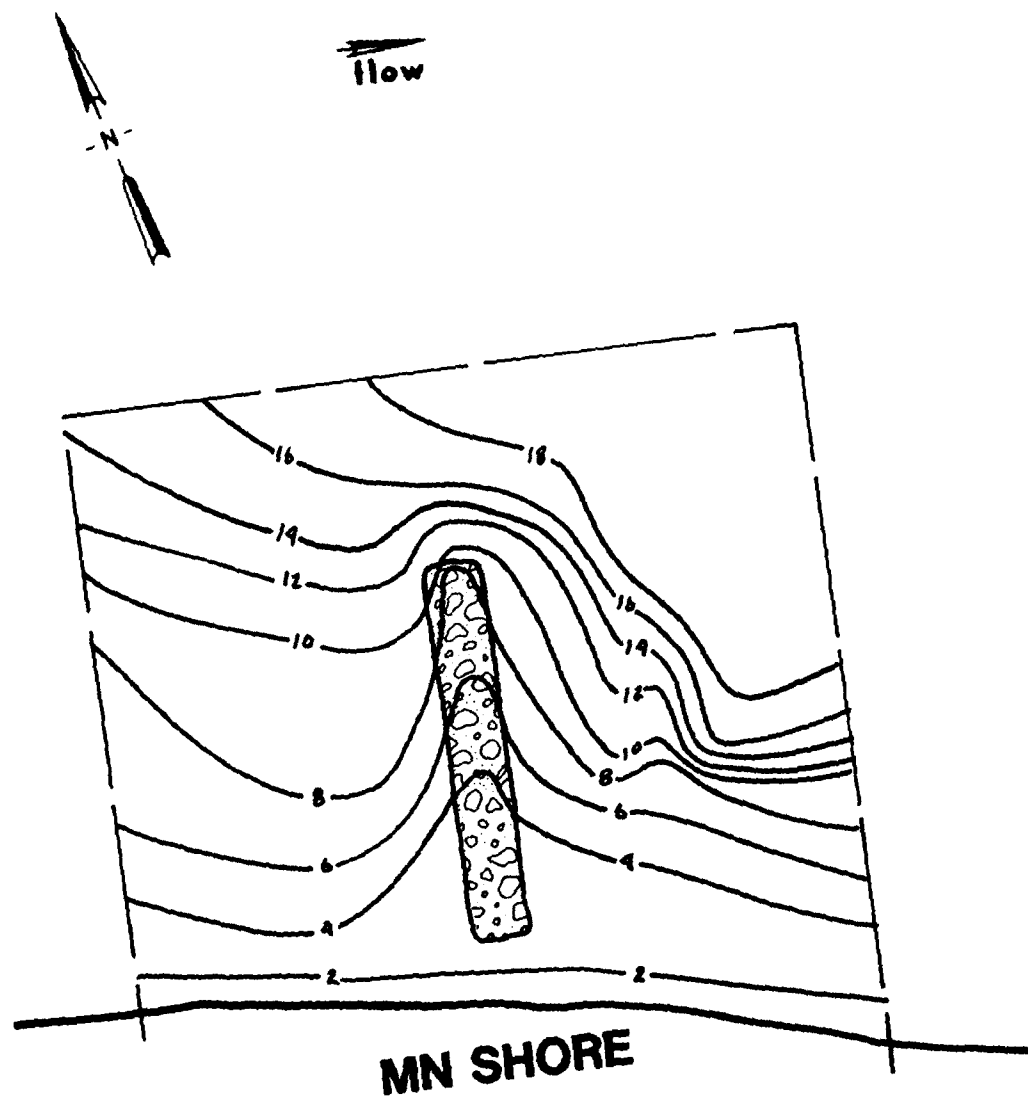
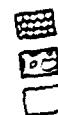


Figure D-15 General Bathymetric and Substrate Map of Wing Dam M11



**LEGEND**  
 Emergent Rock  
 Submerged Rock  
 Sand/Silt



1" = 50'

Figure D-16 General Bathymetric and Substrate Map of Wing Dam M12

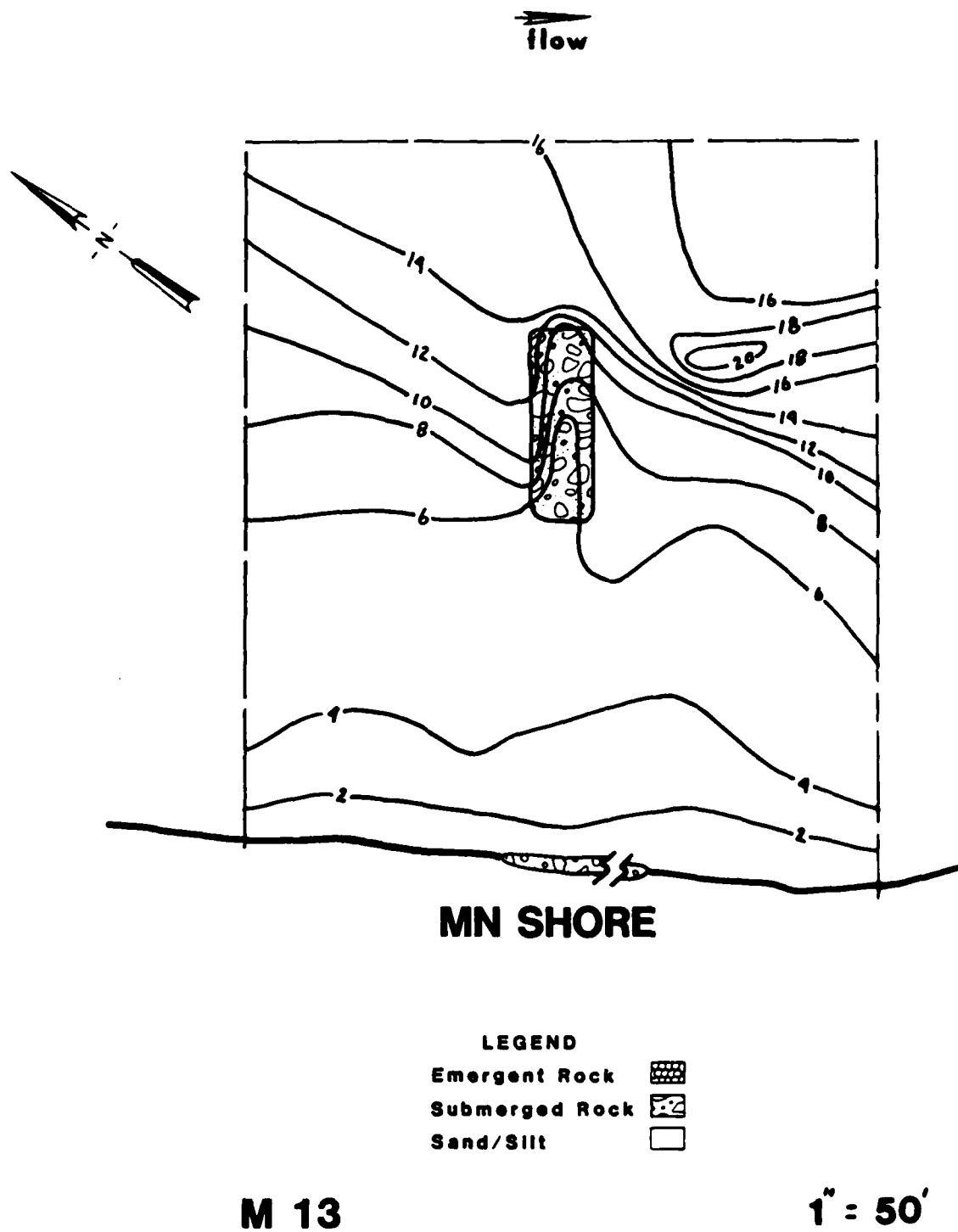
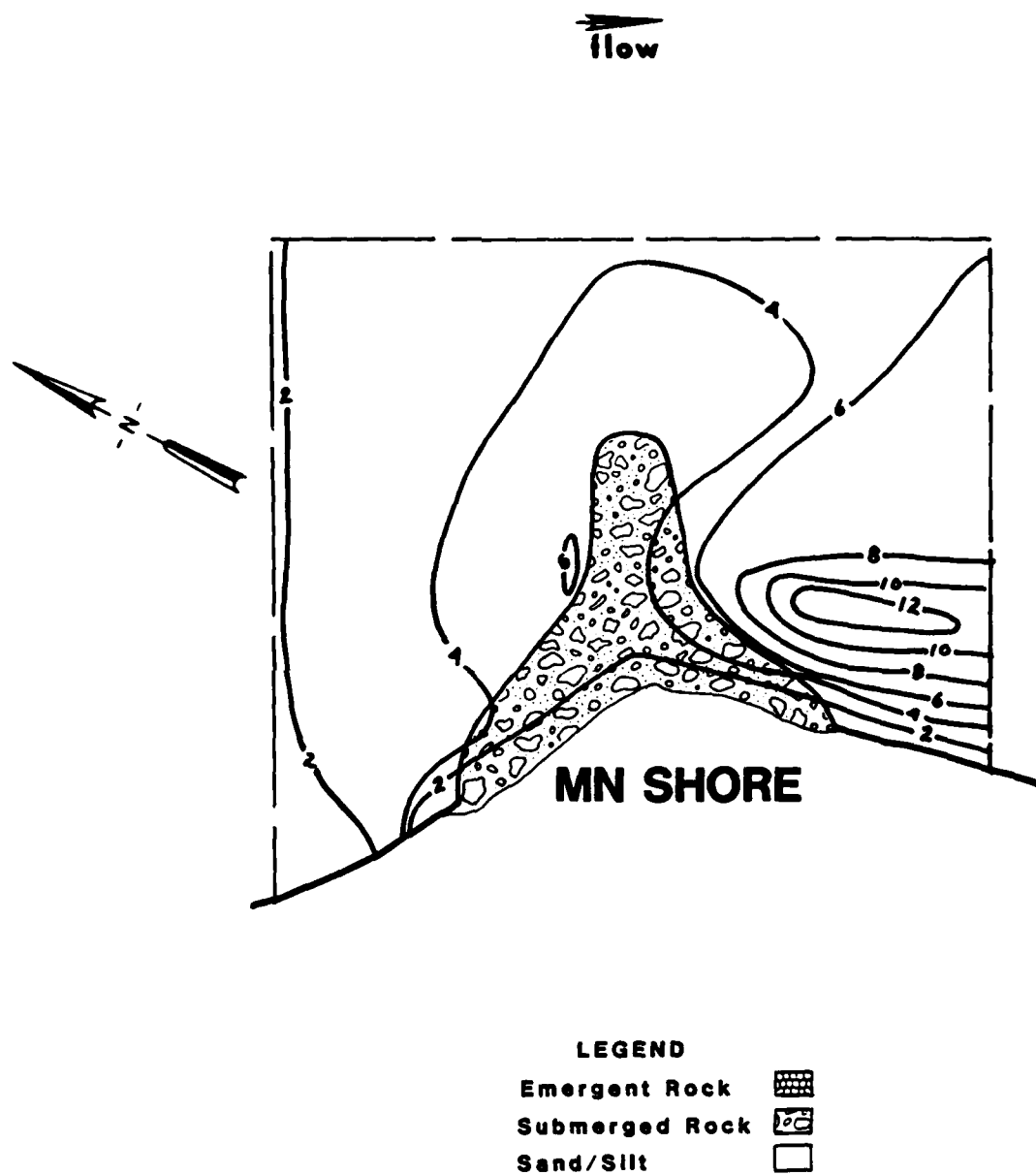


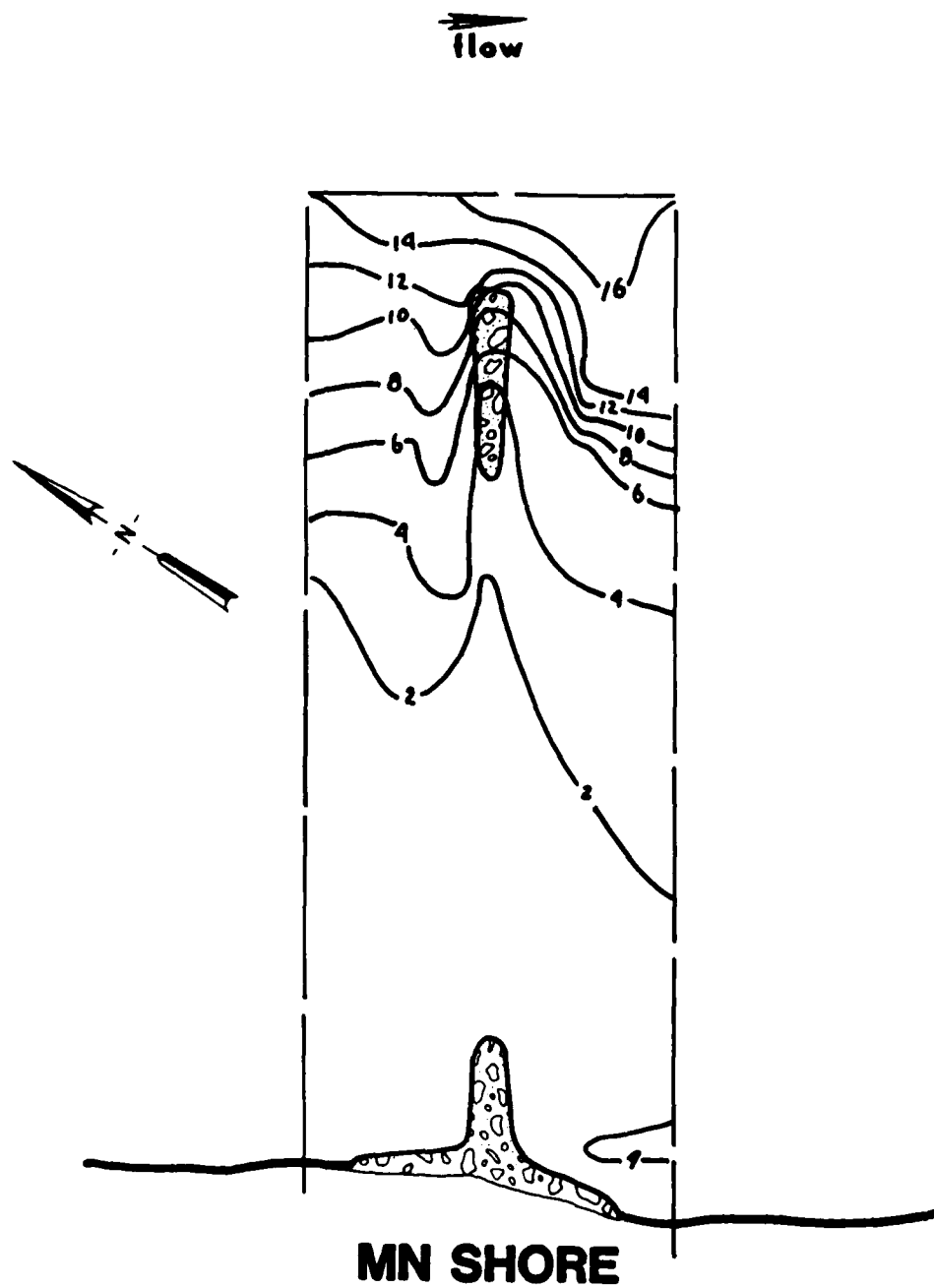
Figure D-17 General Bathymetric and Substrate Map of Wing Dam M13



**M 14**

**1" = 50'**

Figure D-18 General Bathymetric and Substrate Map of Wing Dam M14



**M 15**

**LEGEND**

Emergent Rock

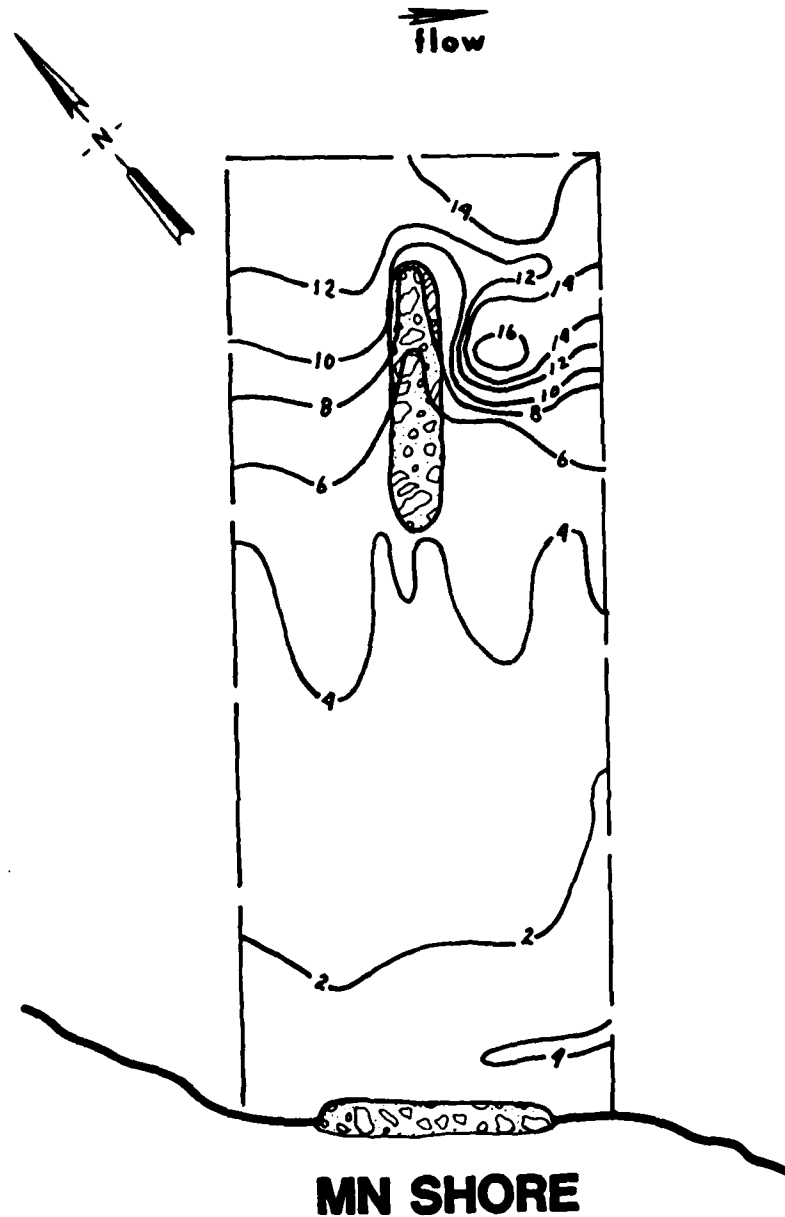
Submerged Rock

Sand/Silt





**1" = 100'**

Figure D-19 General Bathymetric and Substrate Map of Wing Dam M15



LEGEND

Emergent Rock 

Submerged Rock 


Sand/Silt 

Figure D-20 General Bathymetric and Substrate Map of Wing Dam M16

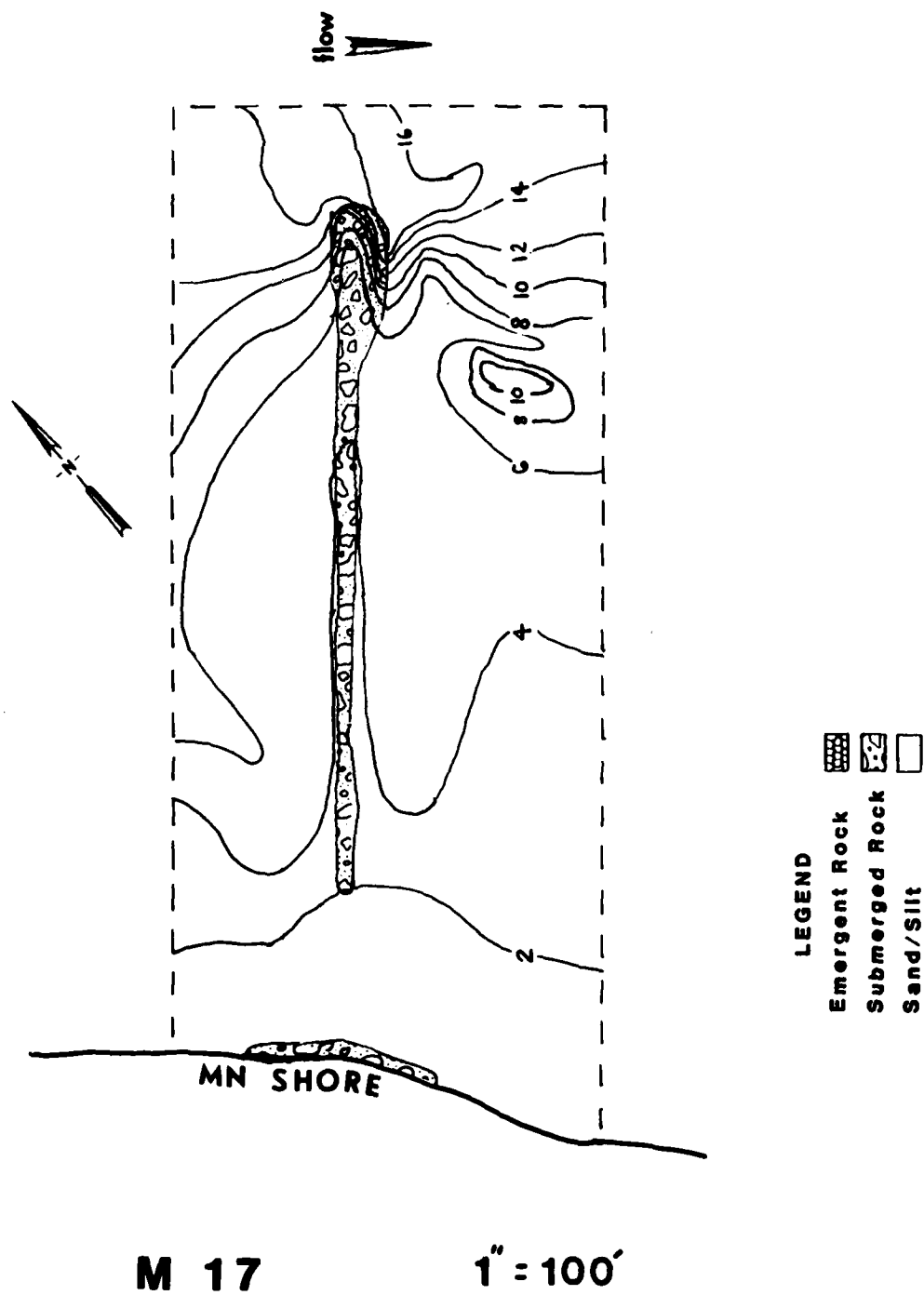


Figure D-21 General Bathymetric and Substrate Map of Wing Dam M17



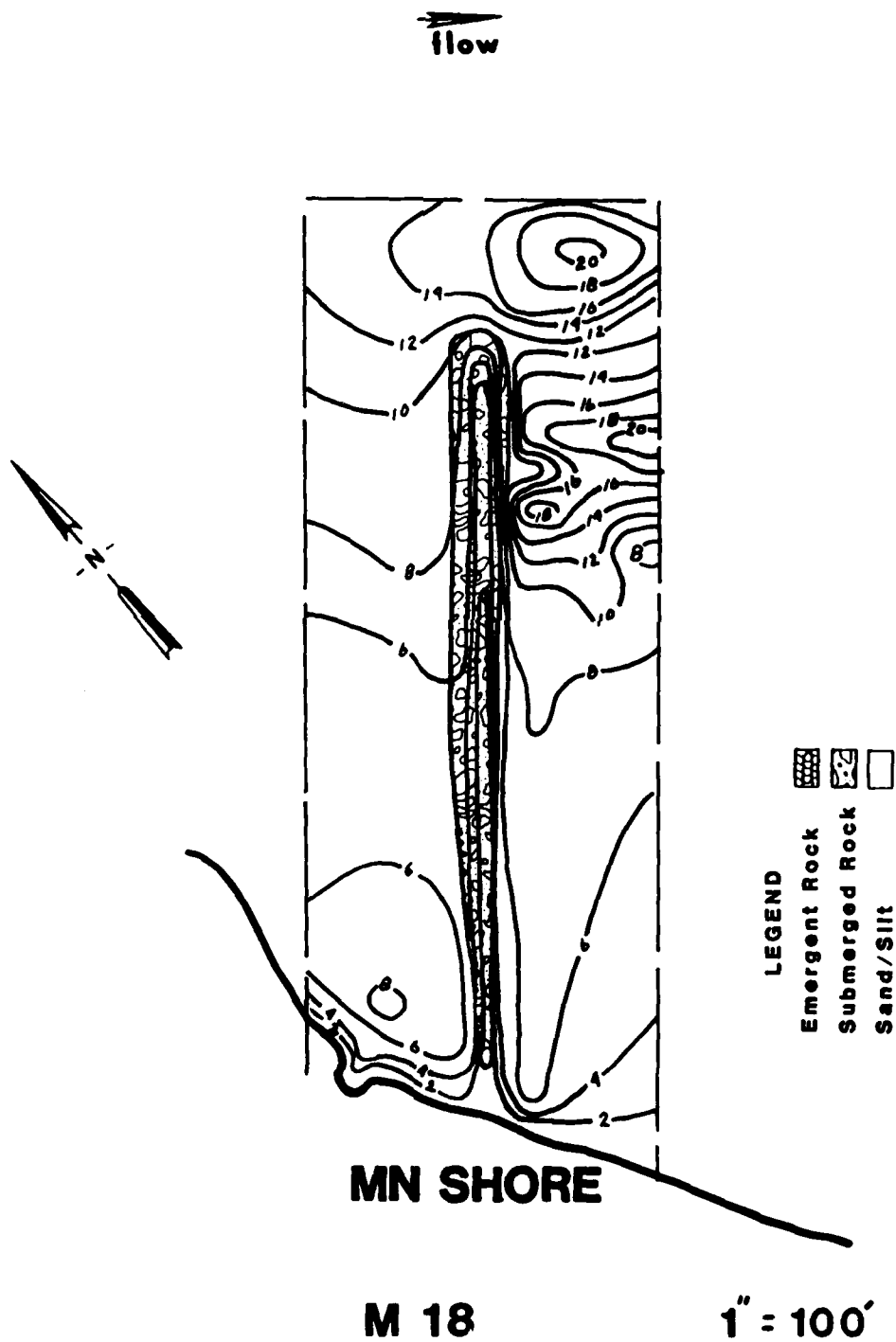



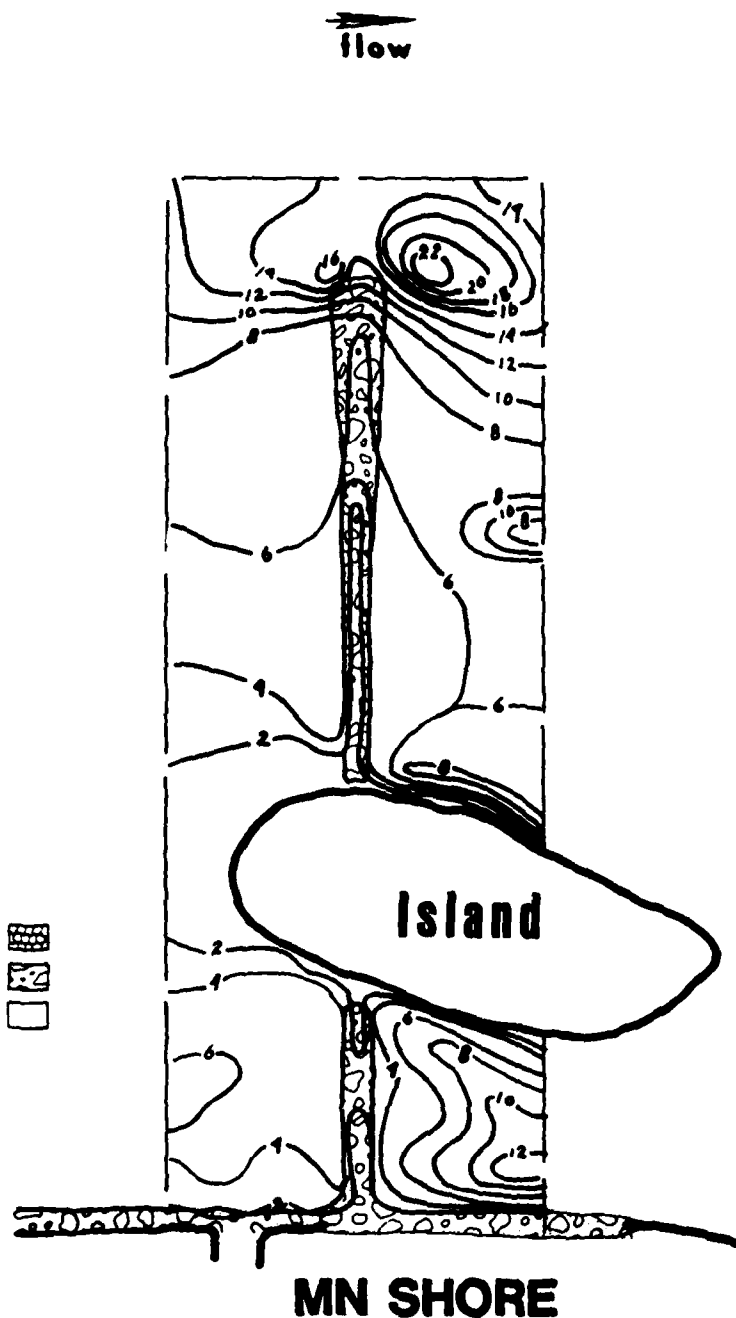


Figure D-22 General Bathymetric and Substrate Map of Wing Dam M18

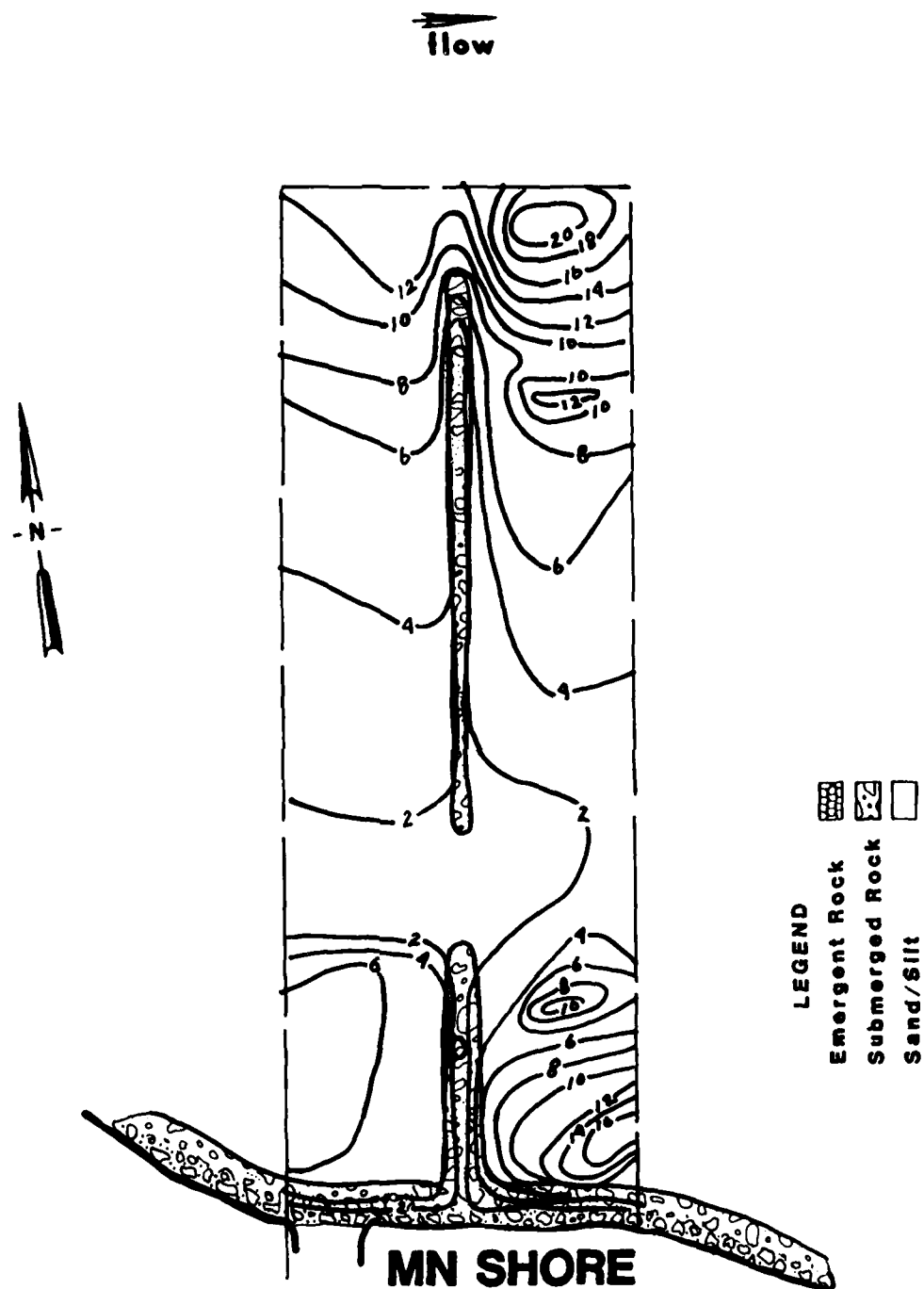
**LEGEND**  
 Emergent Rock   
 Submerged Rock   
 Sand/Silt 



**M 19**

**1" = 100'**

Figure D-23 General Bathymetric and Substrate Map of Wing Dam M19



M 20

1" = 100'

Figure D-24 General Bathymetric and Substrate Map of Wing Dam M20

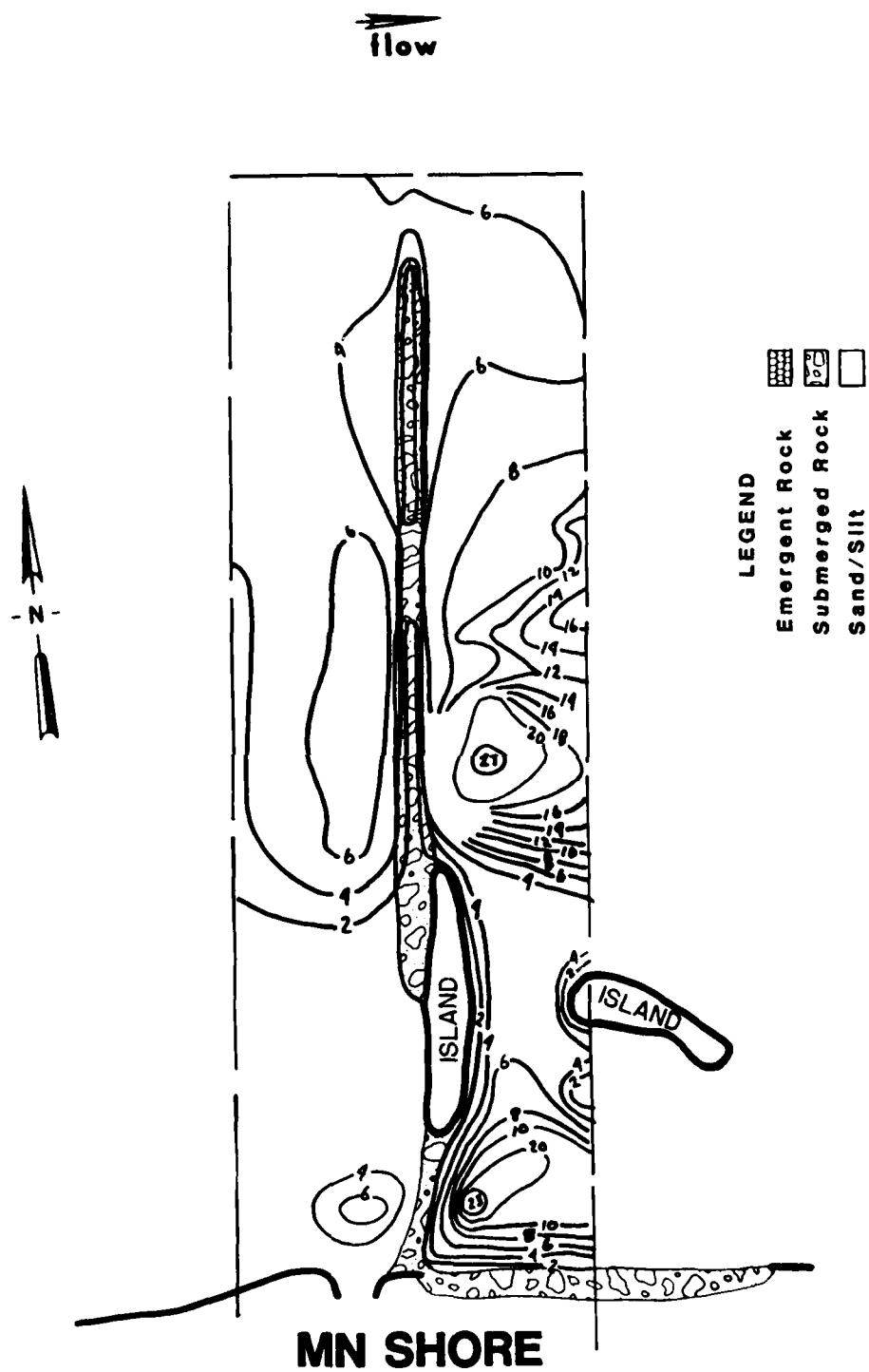


Figure D-25 General Bathymetric and Substrate Map of Wing Dam M21

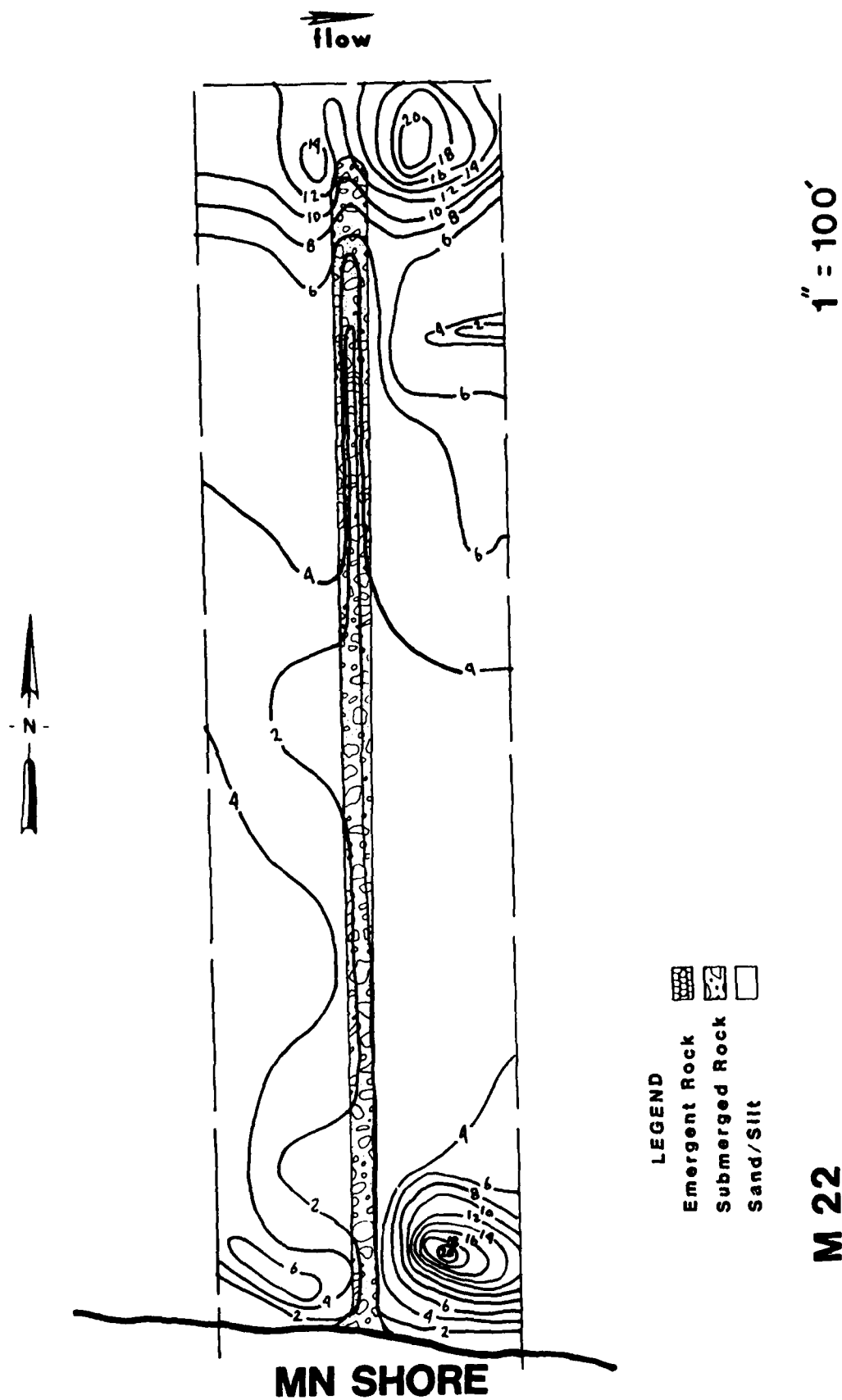


Figure D-26 General Bathymetric and Substrate Map of Wing Dam M22

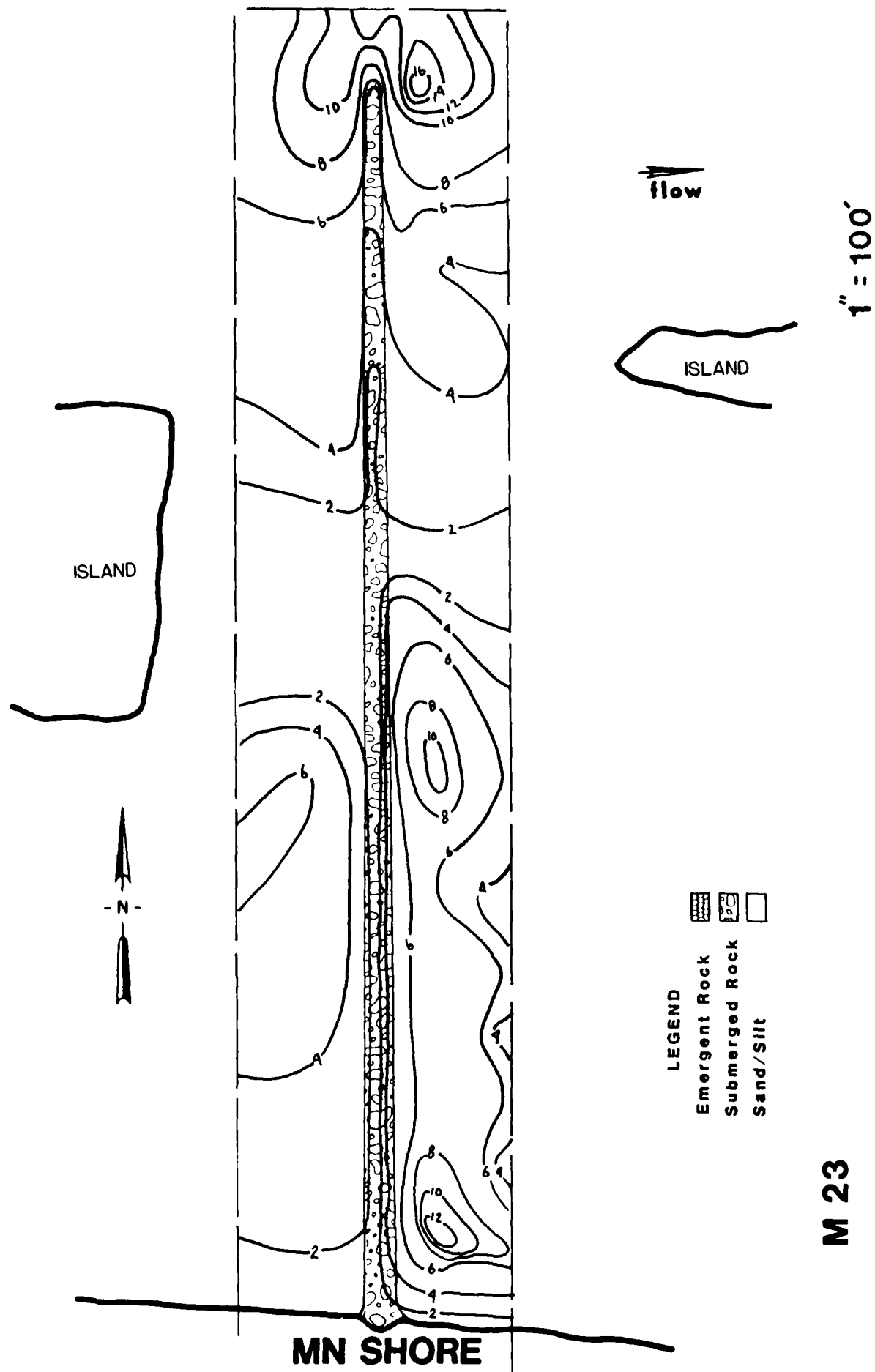
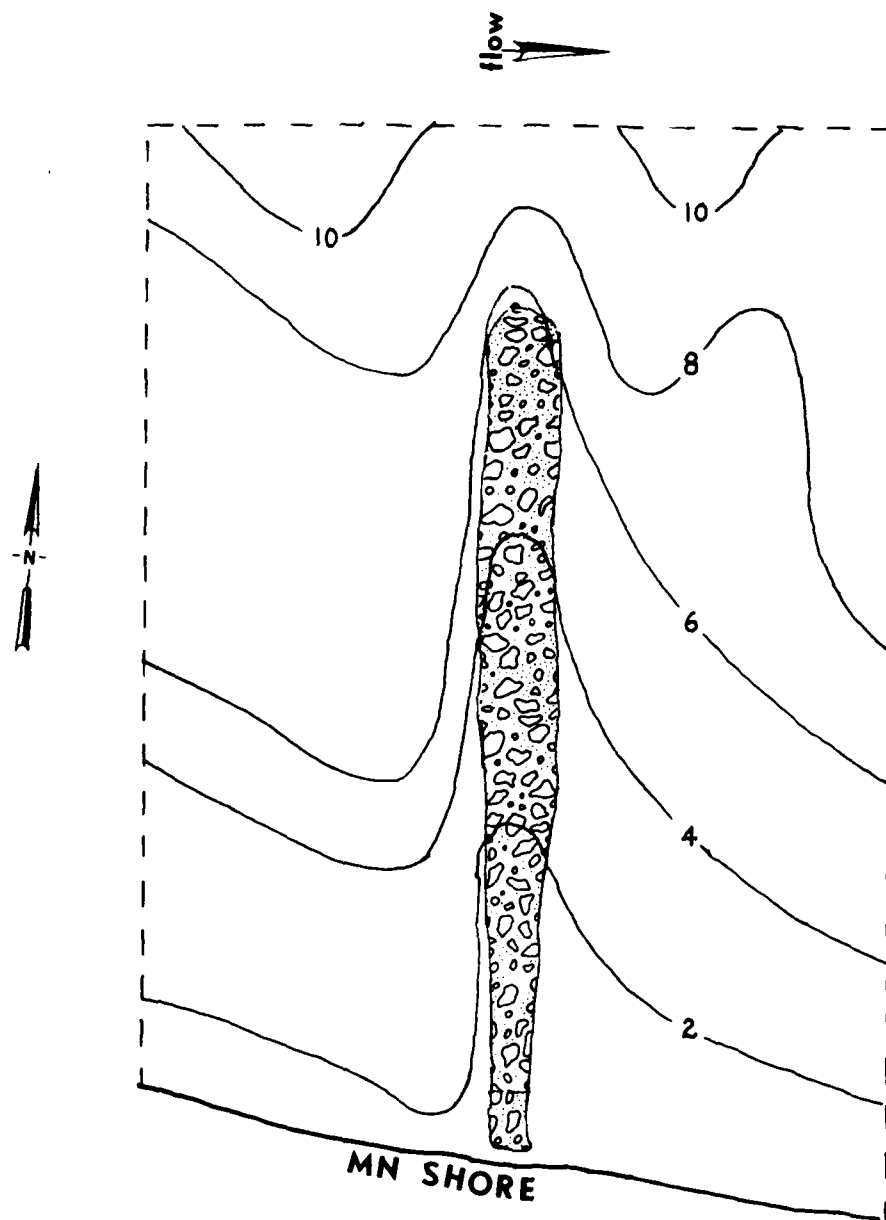


Figure D-27 General Bathymetric and Substrate Map of Wing Dam M23



**M 24A**

**1" = 50'**

**LEGEND**

<b>Emergent Rock</b>	
<b>Submerged Rock</b>	
<b>Sand/Silt</b>	

Figure D-28 General Bathymetric and Substrate Map of Wing Dam M24A

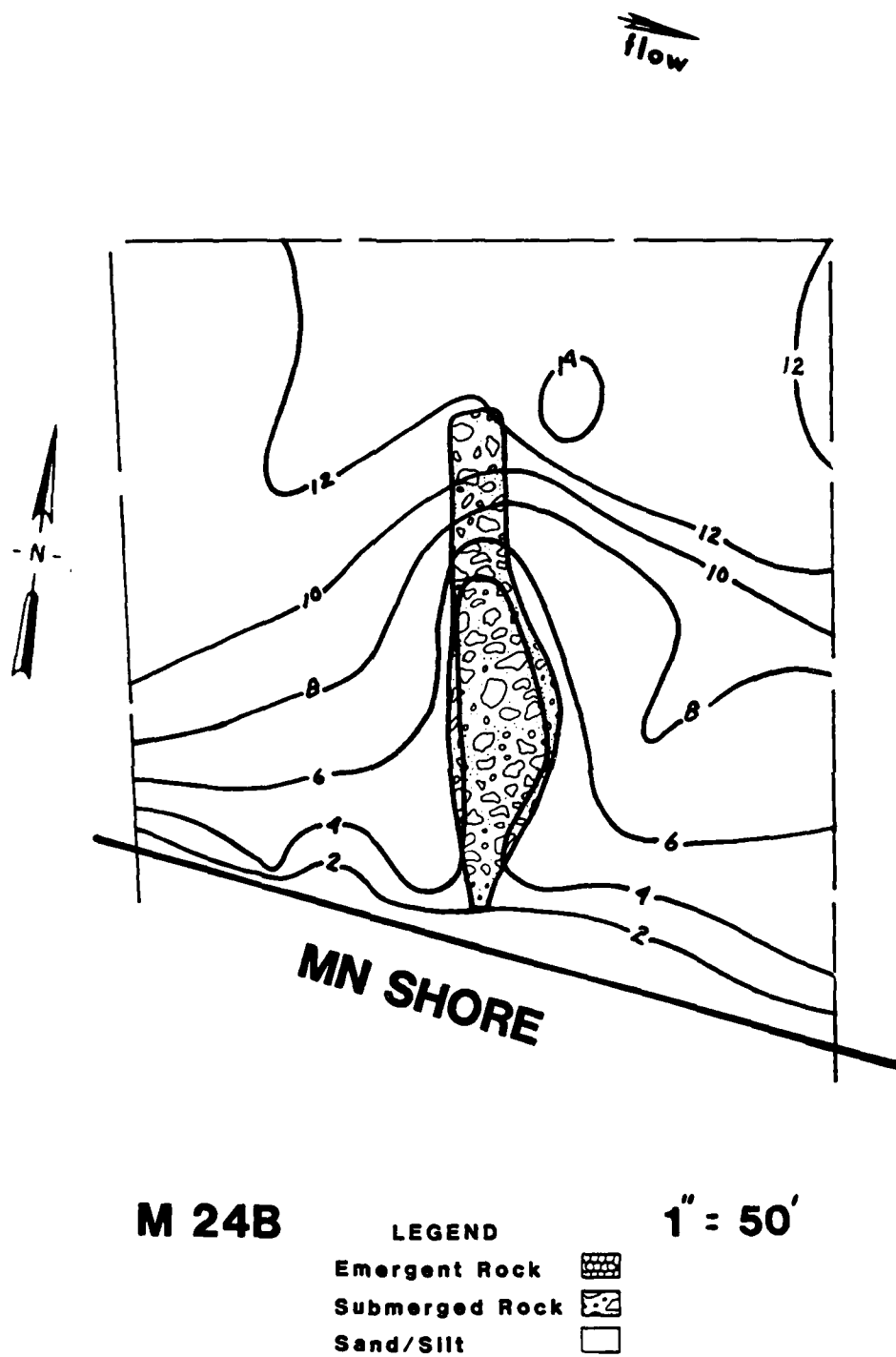
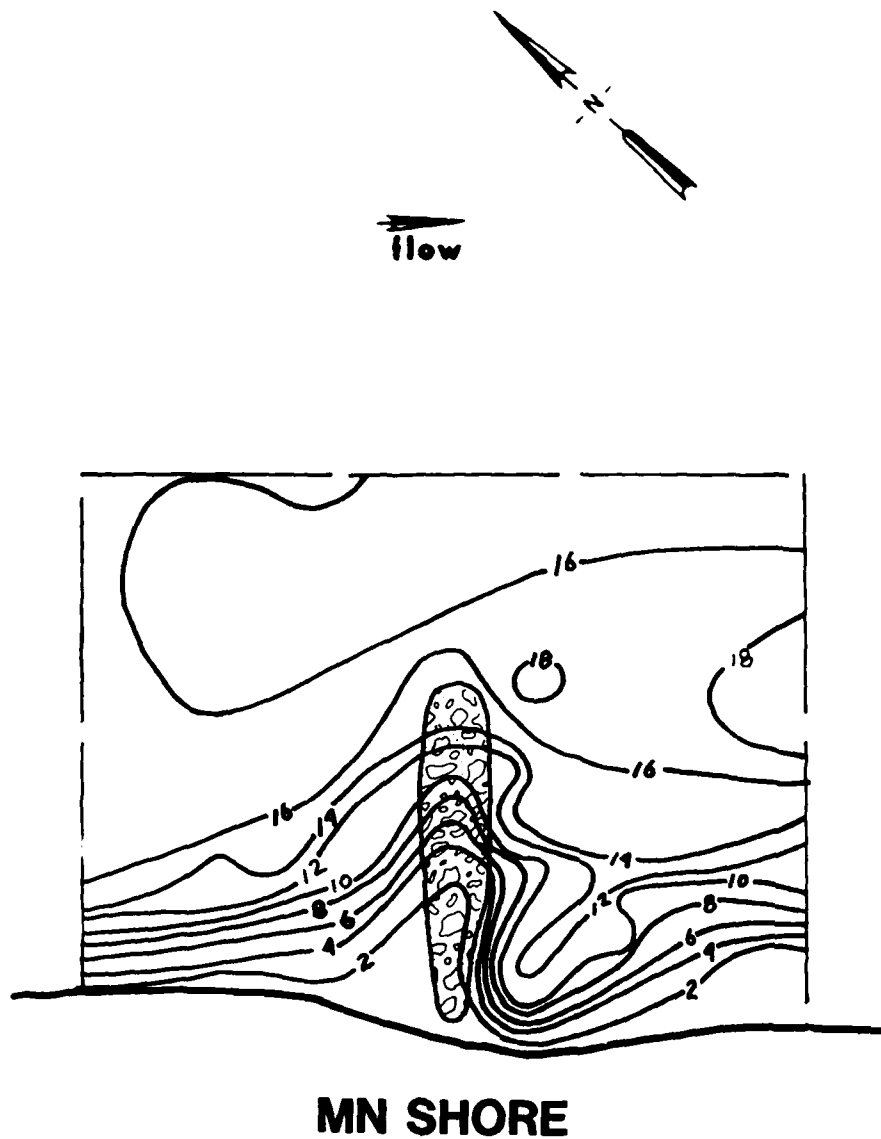


Figure D-29 General Bathymetric and Substrate Map of Wing Dam M24B





**M 24C**

**LEGEND**  
 Emergent Rock  
 Submerged Rock  
 Sand/Silt

**1" = 50'**

Figure D-30 General Bathymetric and Substrate Map of Wing Dam M24C

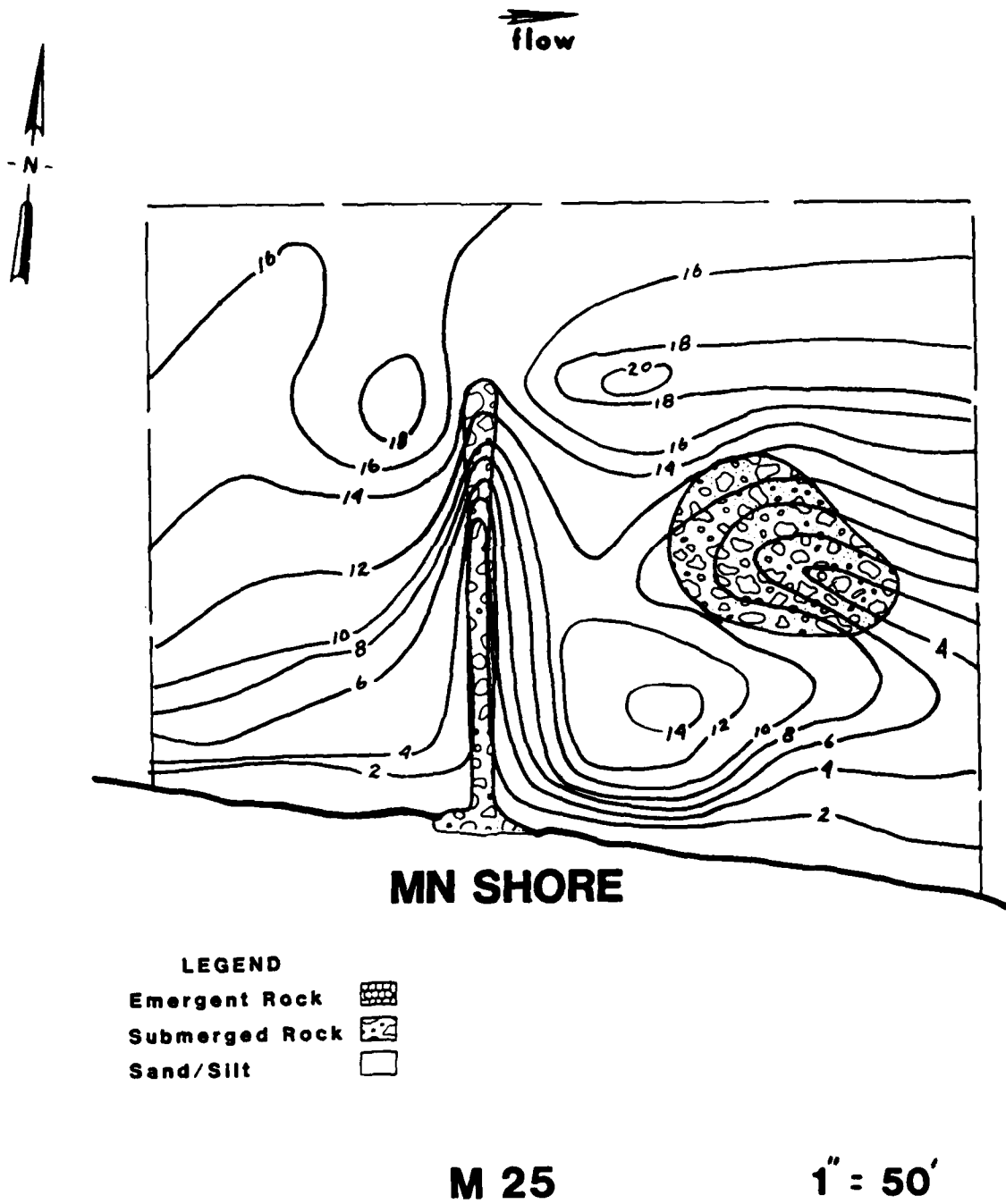
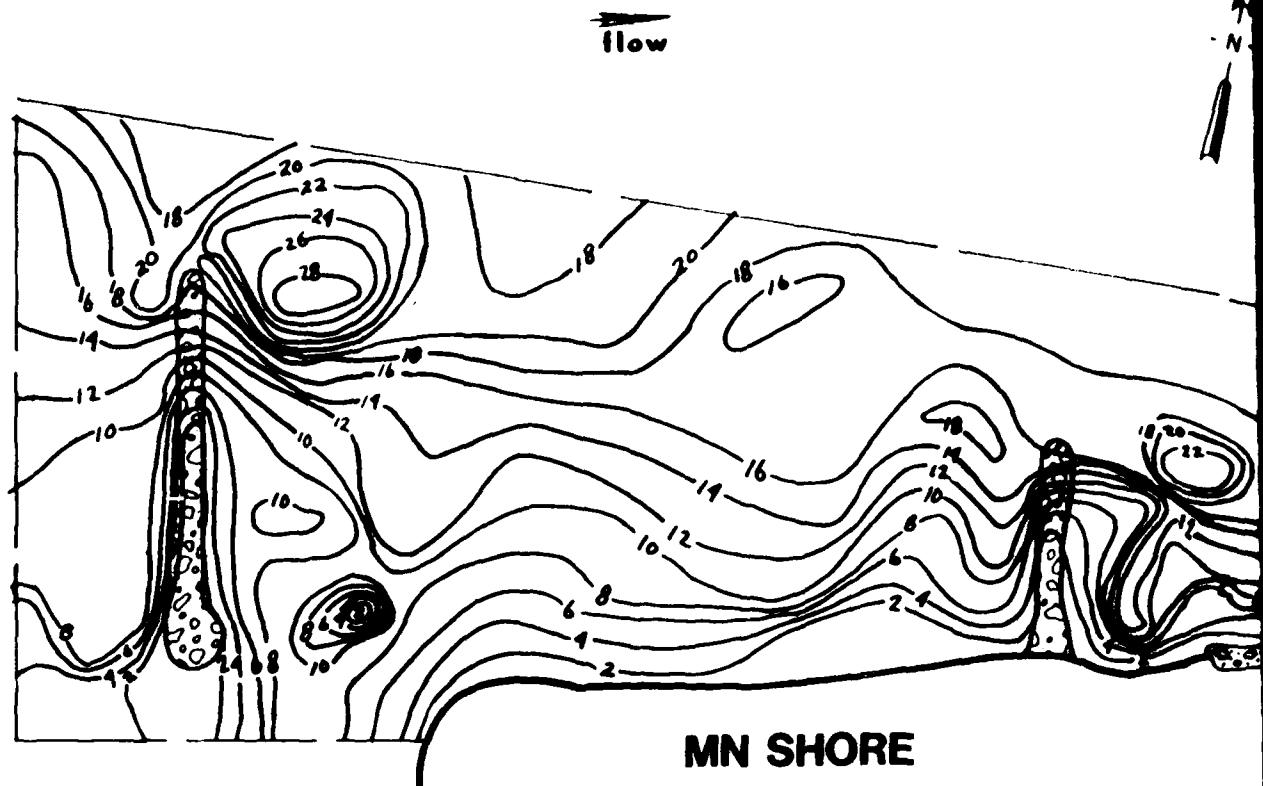


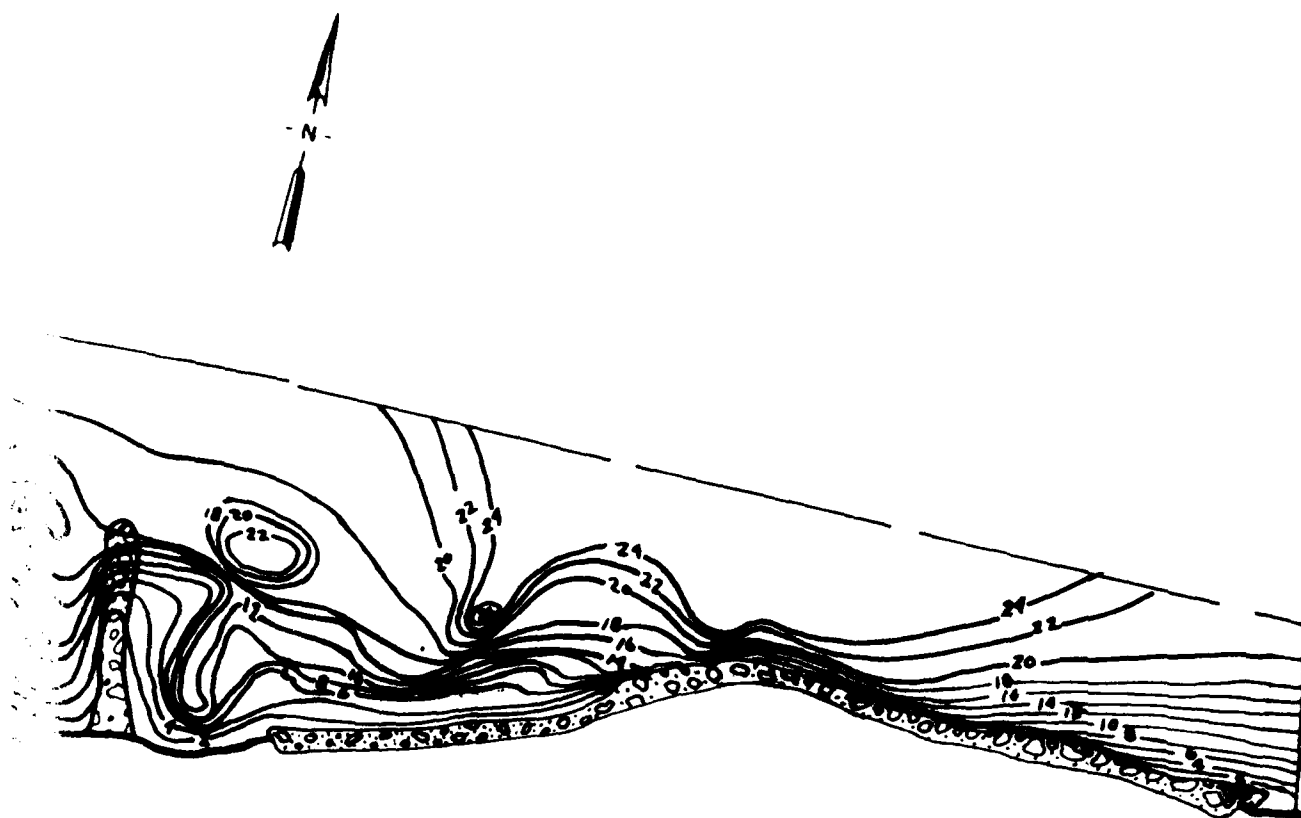
Figure D-31 General Bathymetric and Substrate Map of Wing Dam M25






1" = 100'

Figure D-32 General Bathymetric and Substrate Map of Riprap M26, Wing Dam M27 and M28

16/2



**M 27**

**LEGEND**  
 Emergent Rock   
 Submerged Rock   
 Sand/Silt 

**M 26**

g Dam M27 and M28

65  
20/2

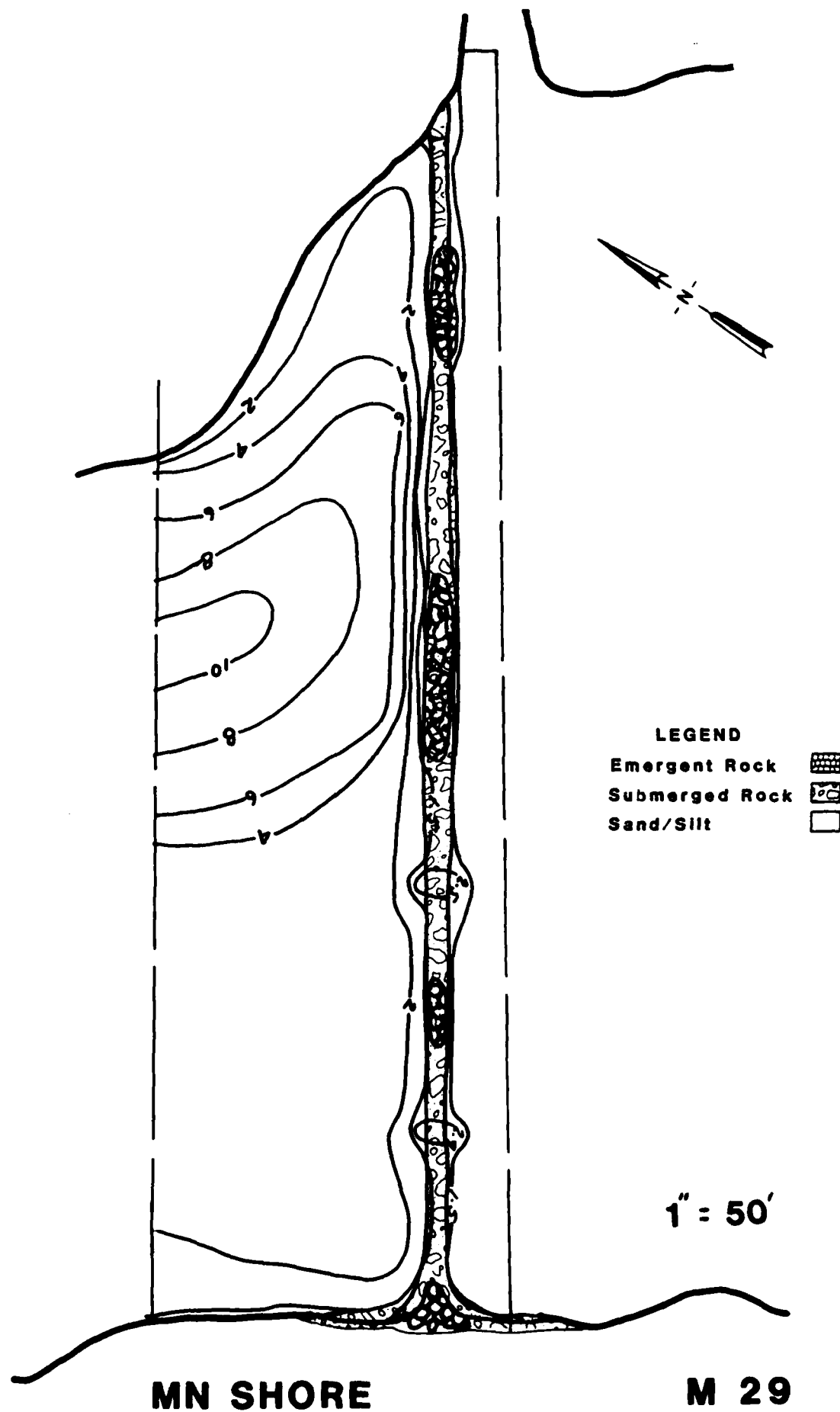
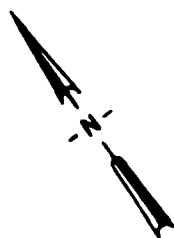
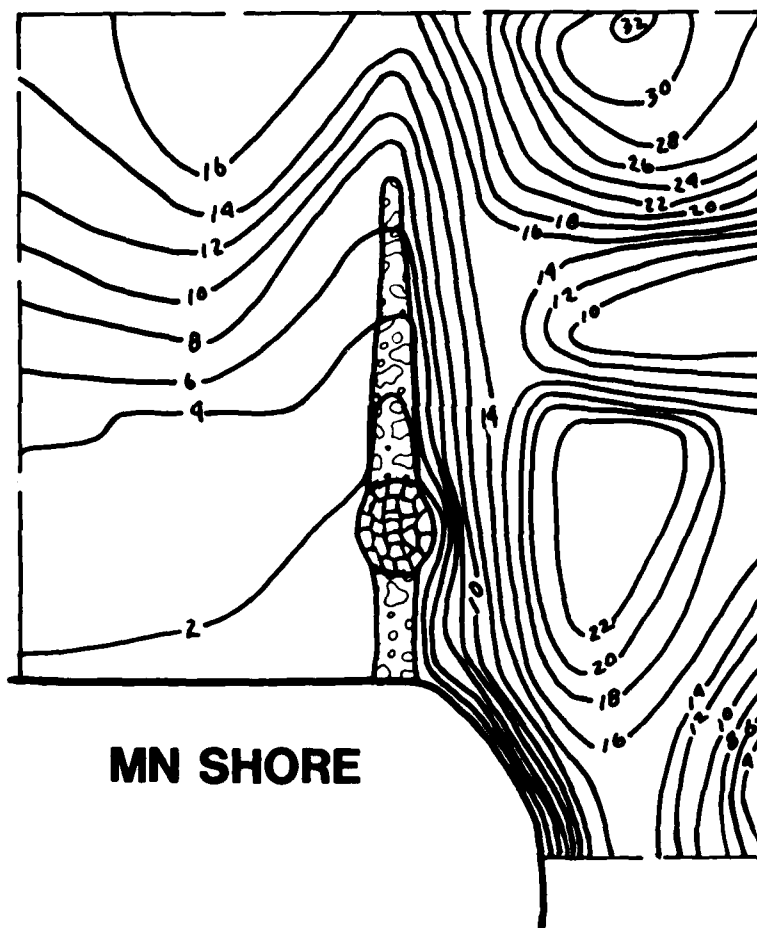


Figure D-33 General Bathymetric and Substrate Map of Closing Dam M29



flow



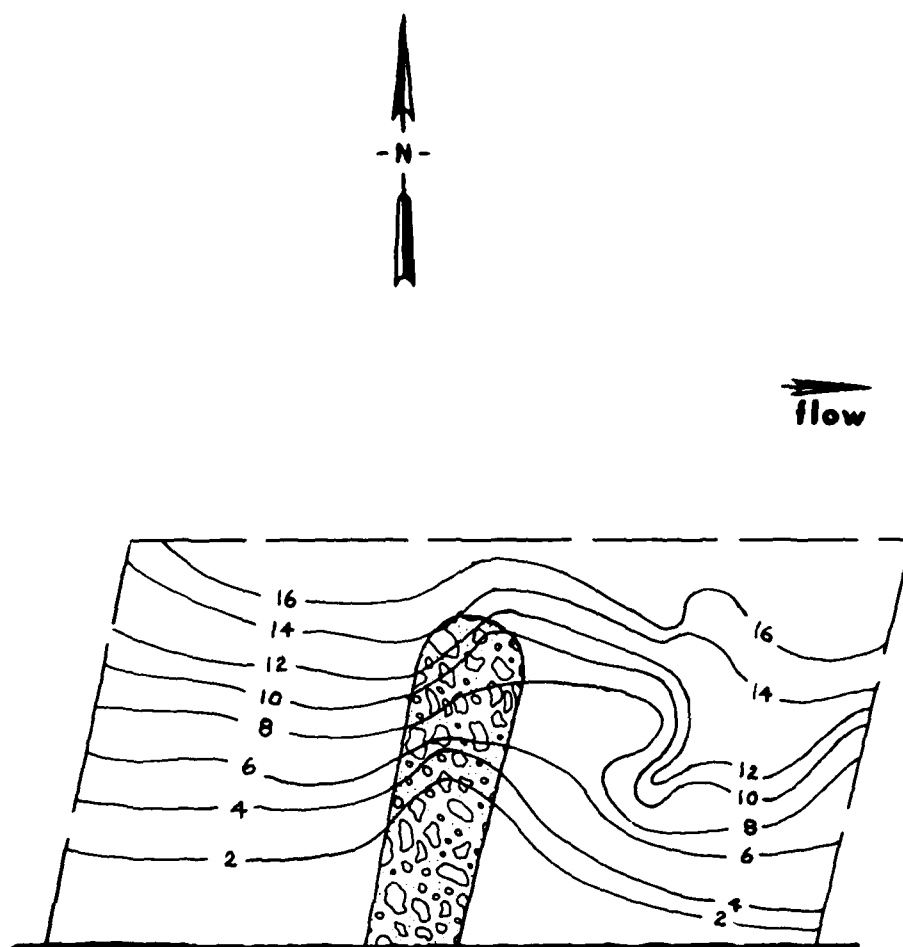
**M 30**

**LEGEND**

**Emergent Rock**   
**Submerged Rock**   
**Sand/Silt** 

**1" = 50'**

Figure D-34 General Bathymetric and Substrate Map of Wing Dam M30



**M 31**

**1" = 50'**

**LEGEND**




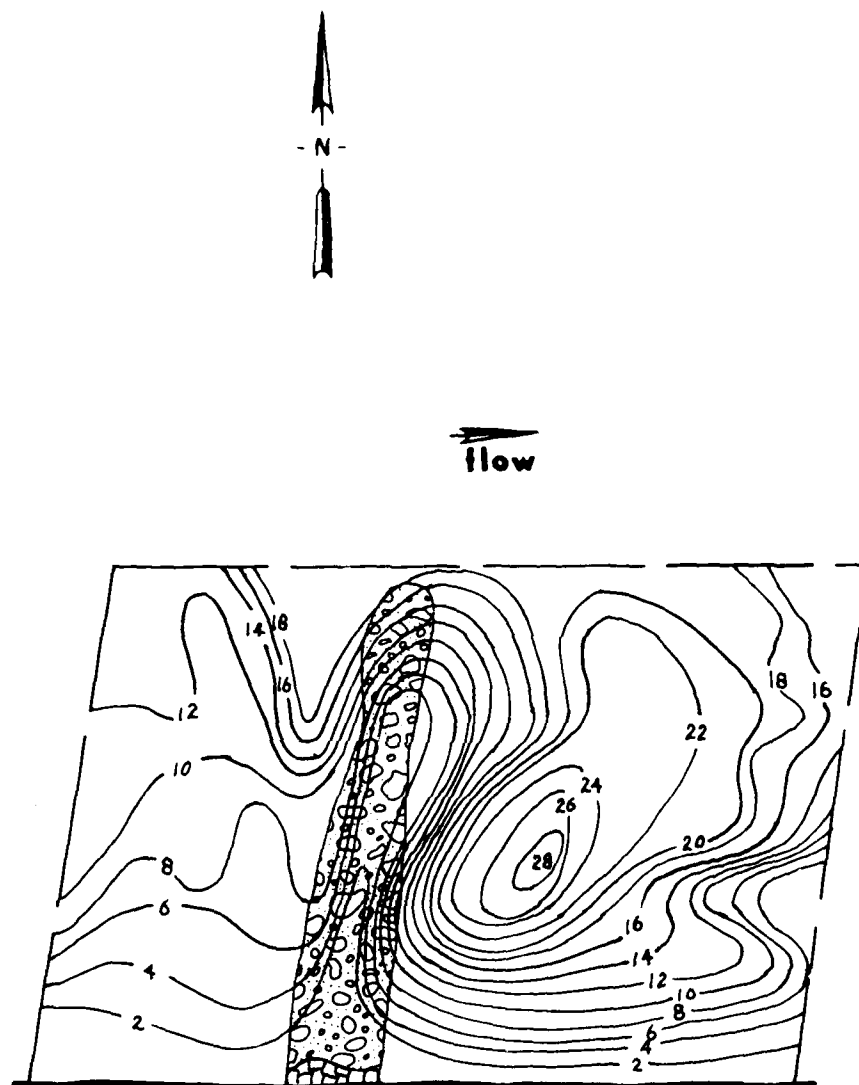



Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-35 General Bathymetric and Substrate Map of Wing Dam M31



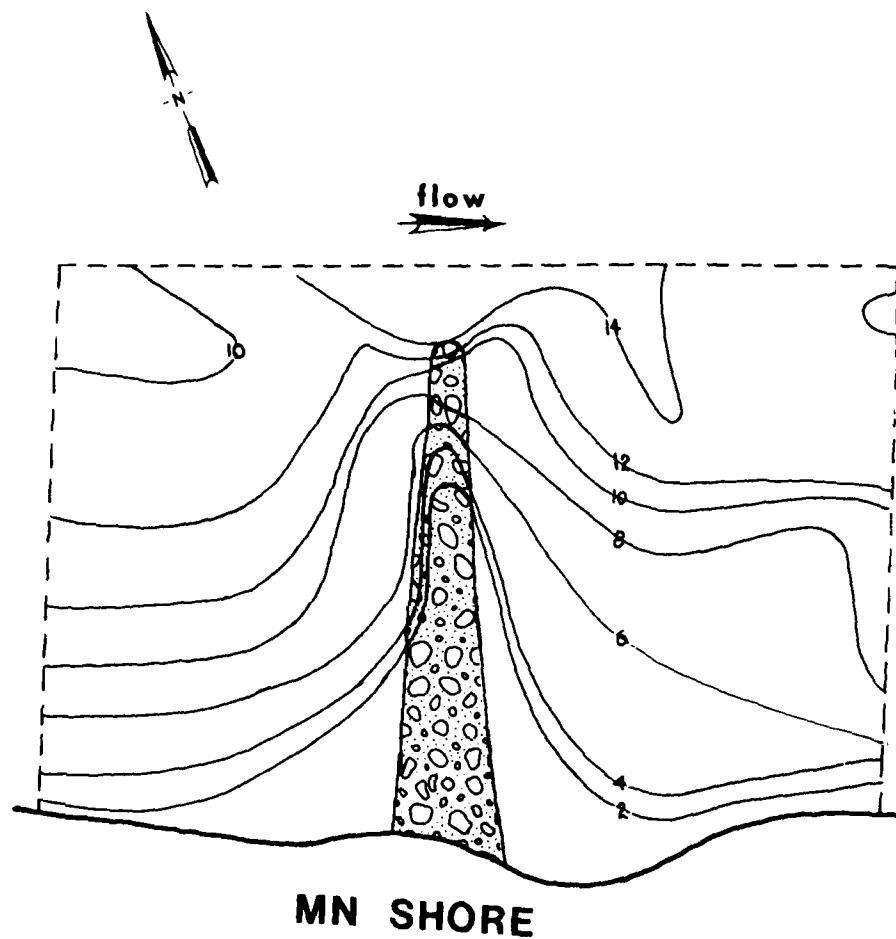
**M 32**

**LEGEND**  
**Emergent Rock**   
**Submerged Rock**   
**Sand/Silt** 

**1" = 50'**

Figure D-36 General Bathymetric and Substrate Map of Wing Dam M32





**M 33**

**1" = 50'**

**LEGEND**




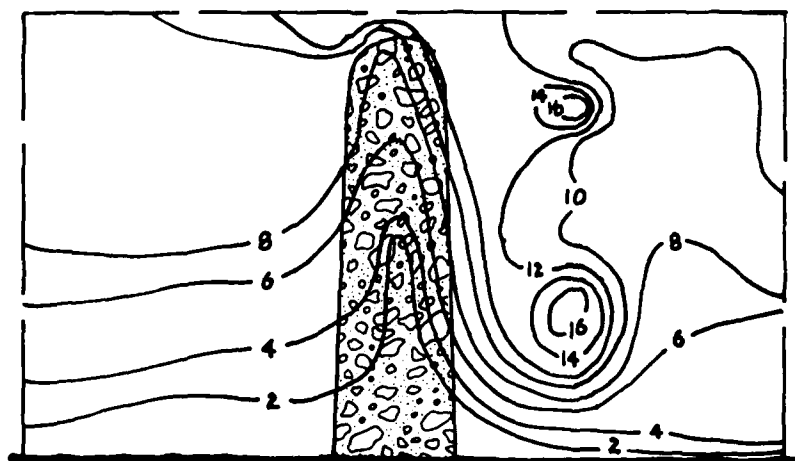
Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-37 General Bathymetric and Substrate Map of Wing Dam M33



**M 34**

**LEGEND**  
Emergent Rock  
Submerged Rock  
Sand/Silt

**1" = 50'**

Figure D-38 General Bathymetric and Substrate Map of Wing Dam M34

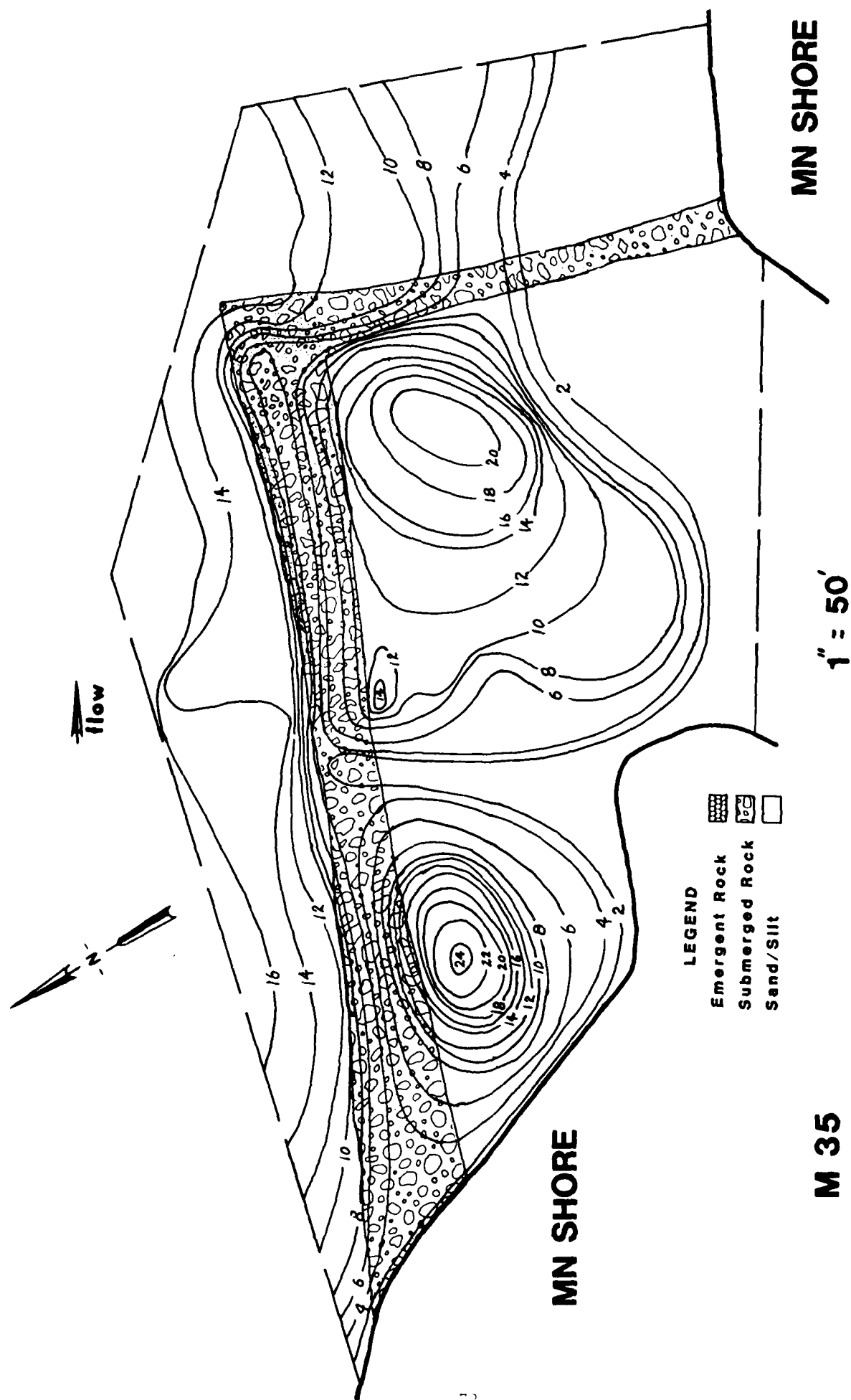


Figure D-39 General Bathymetric and Substrate Map of Closing Dam M35

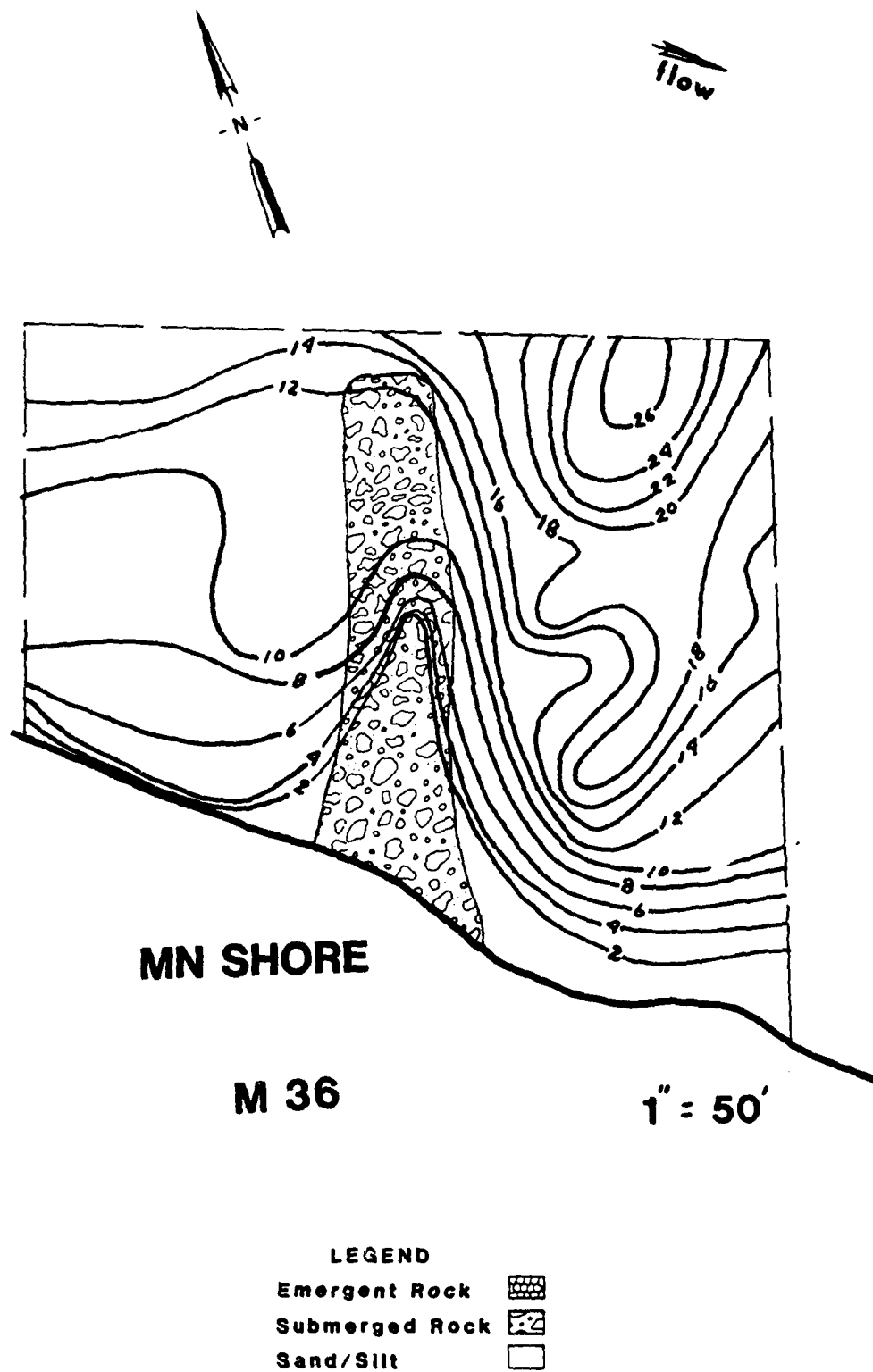
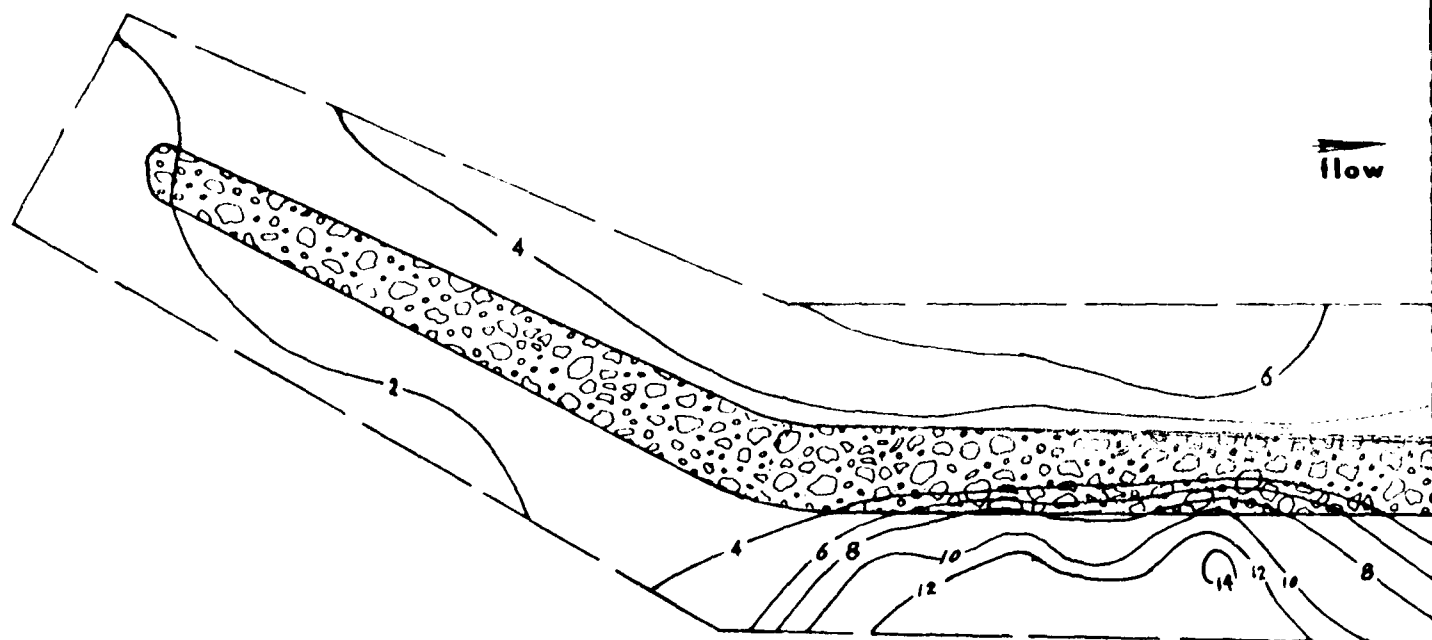


Figure D-40 General Bathymetric and Substrate Map of Wing Dam M36

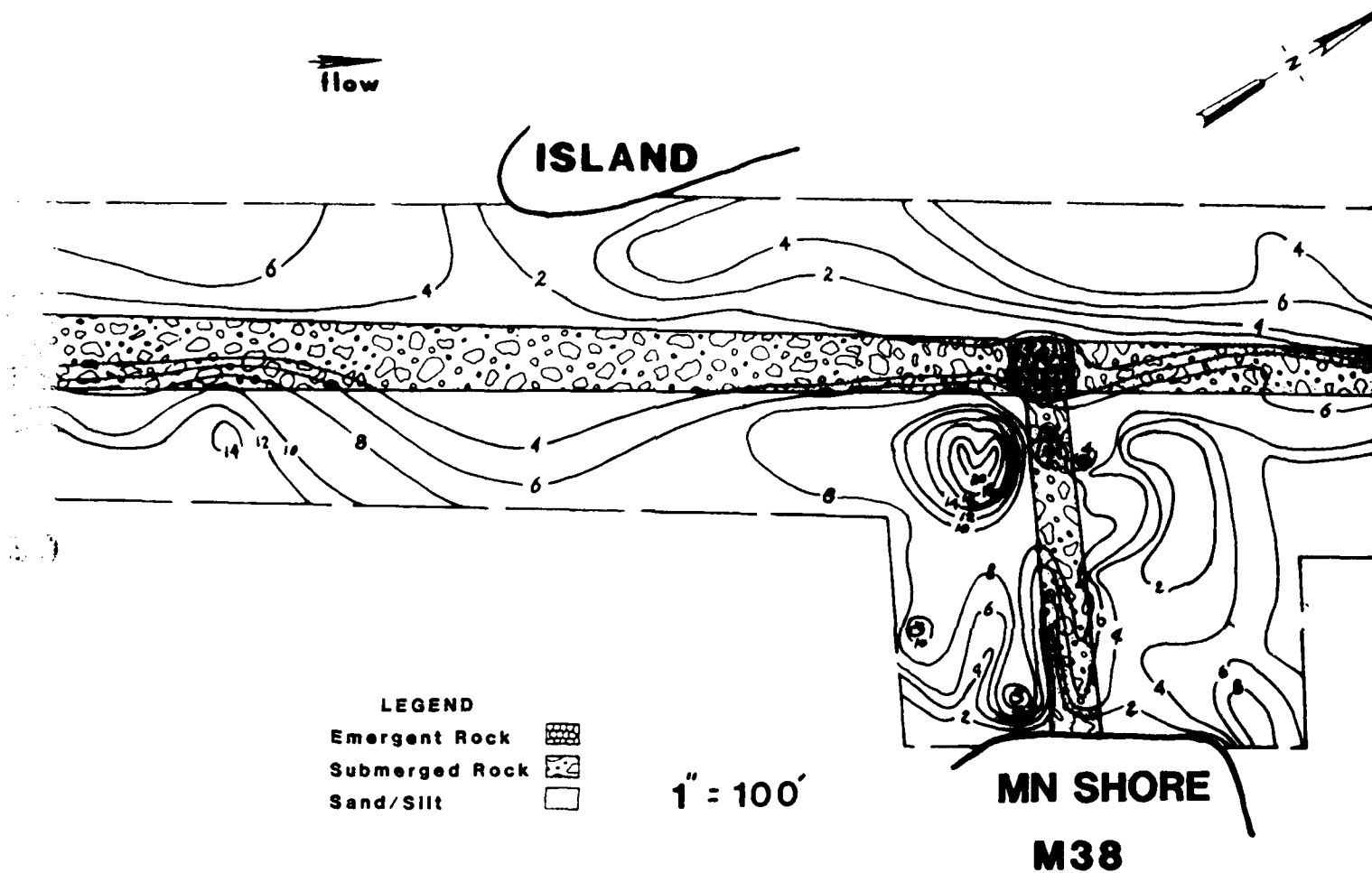


**M39**

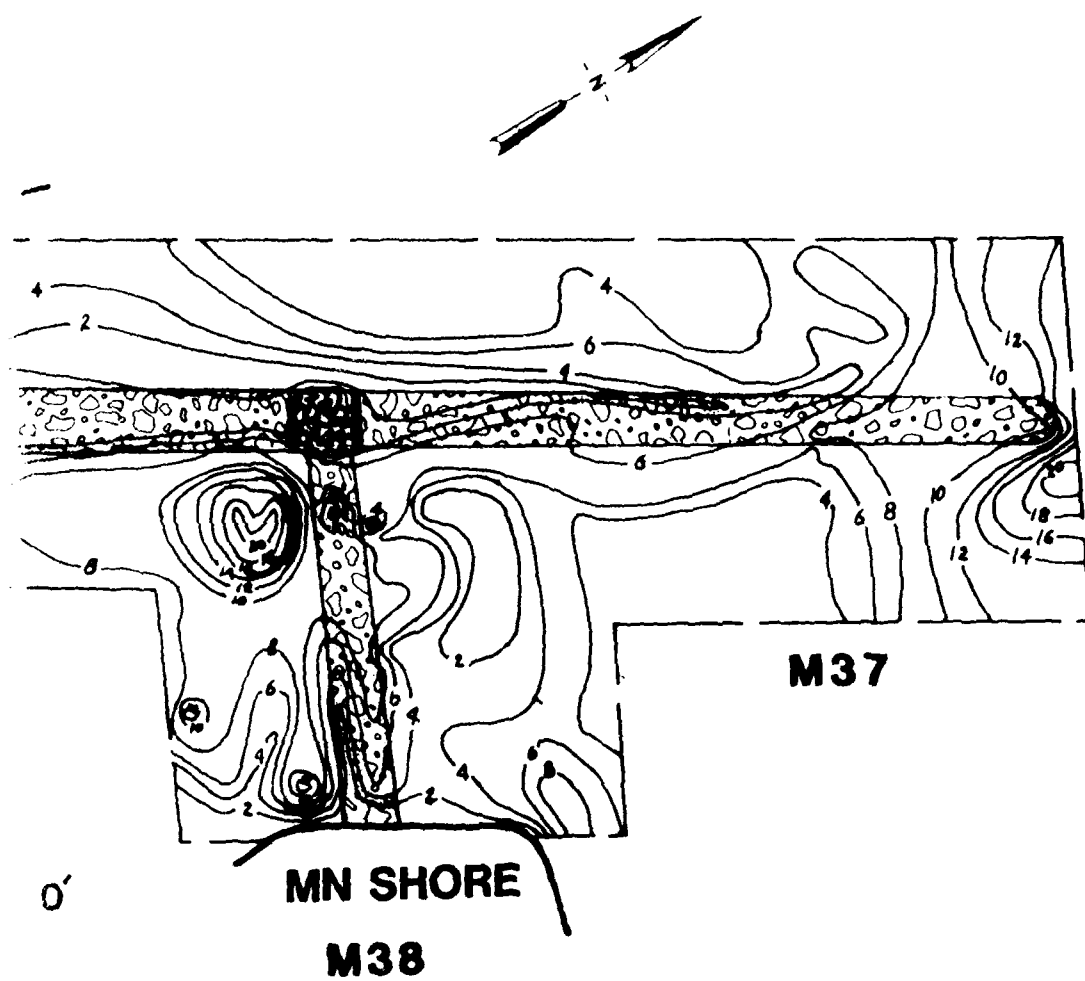
LEG  
 Emerge  
 Submer  
 Sand/S

Figure D-41 General Bathymetric and Substrate Map of Wing Dam M38, Closing Dams

1342

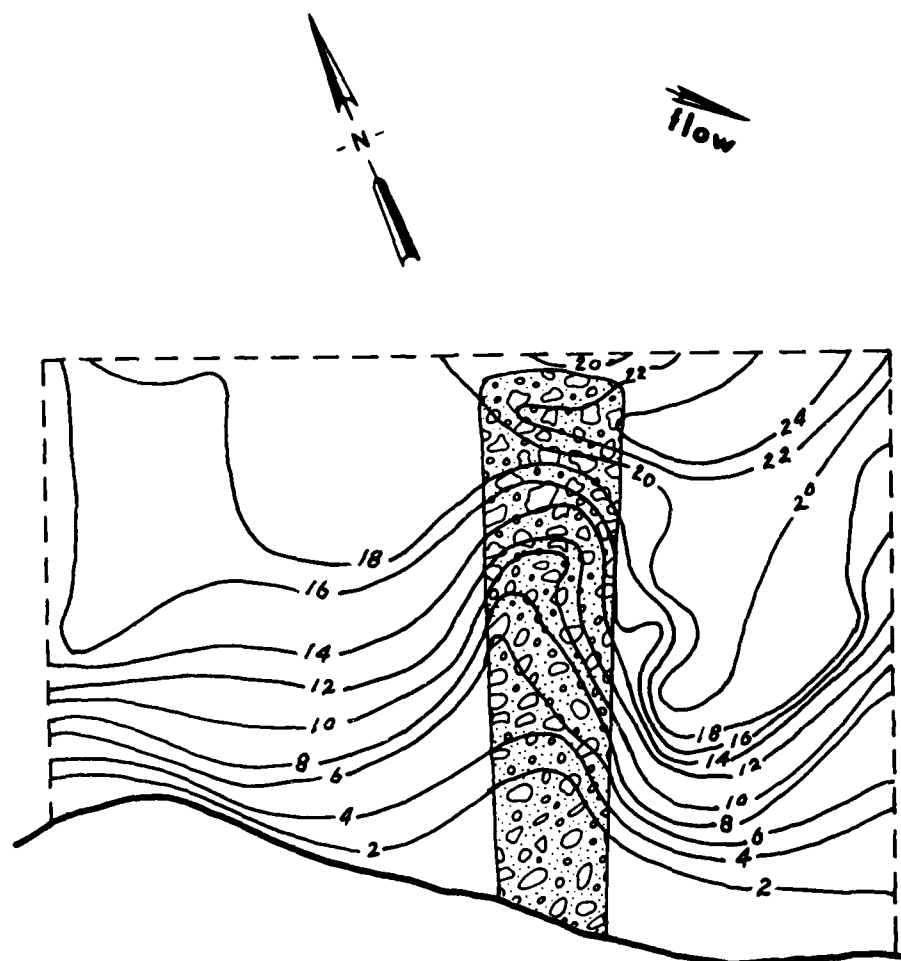


Wing Dam M38, Closing Dams M37 and M39



3af3

74



**MN SHORE**

**M 40**

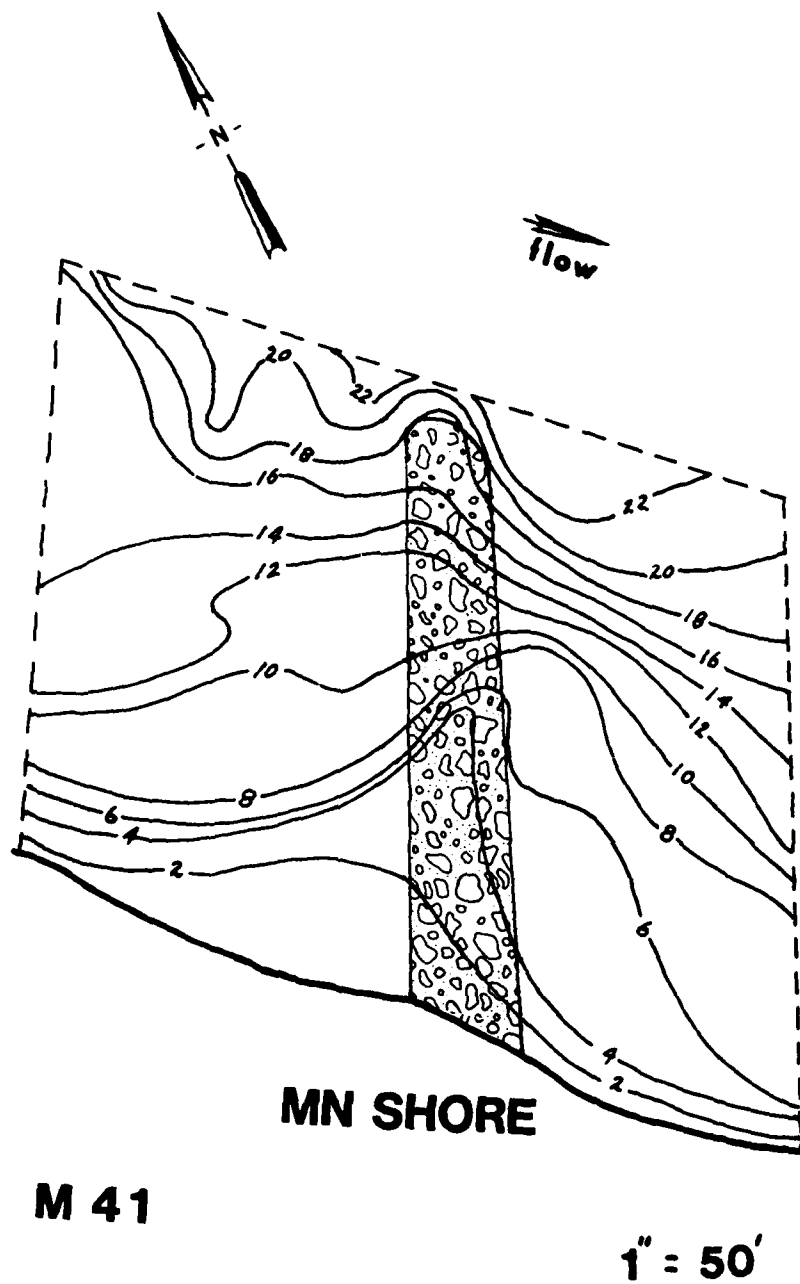
**1" = 50'**

**LEGEND**

Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-42 General Bathymetric and Substrate Map of Wing Dam M40





**LEGEND**

Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-43 General Bathymetric and Substrate Map of Wing Dam M41

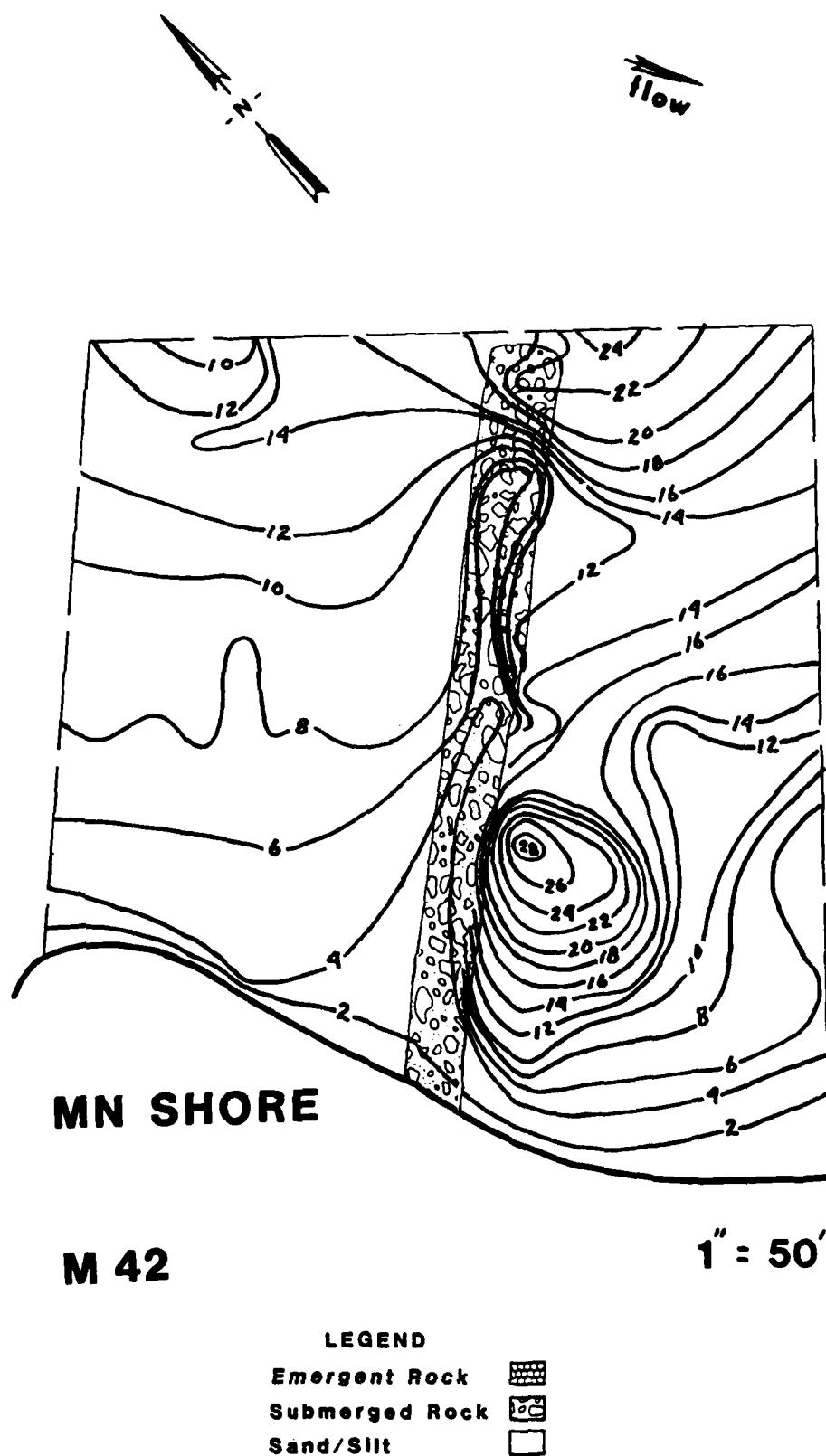
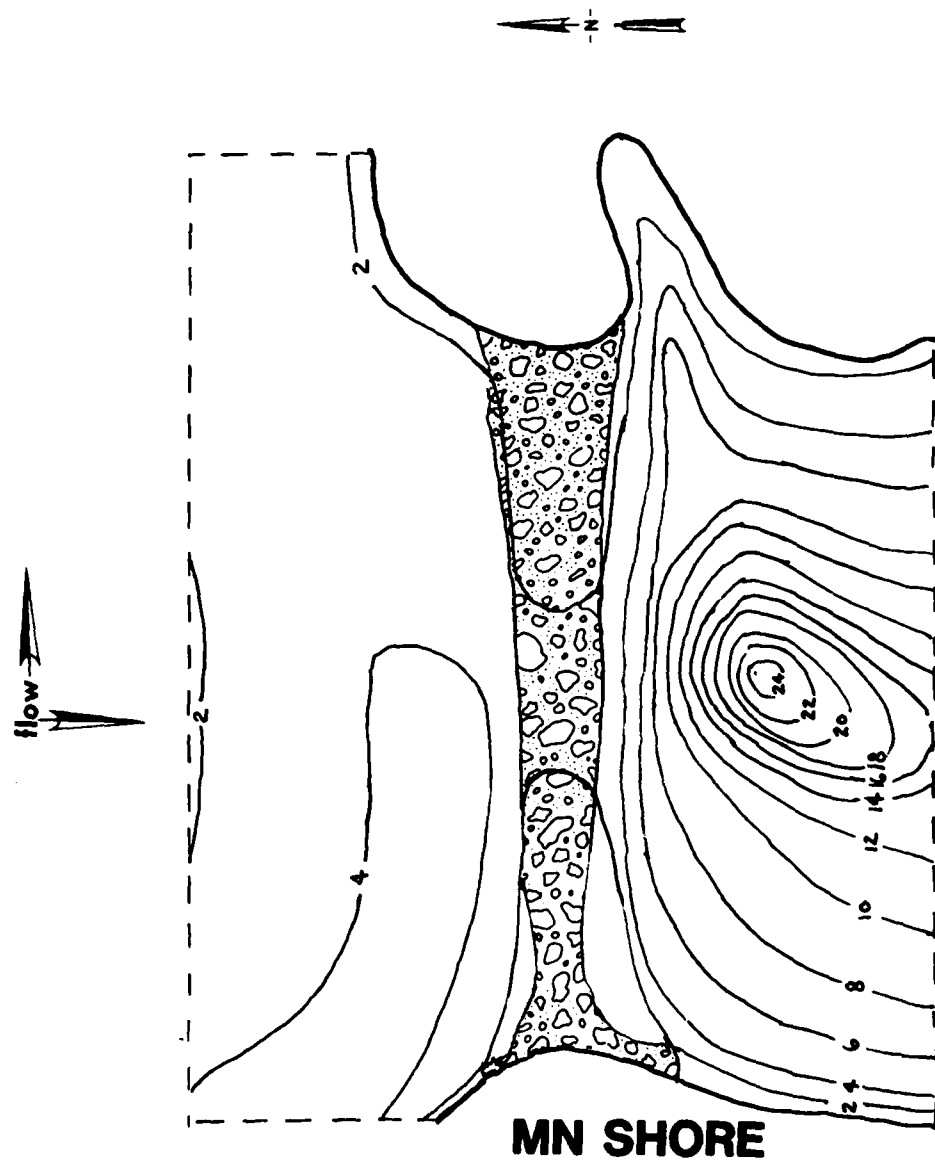


Figure D-44 General Bathymetric and Substrate Map of Wing Dam M42



**M 43**

**1" = 50'**

**LEGEND**

- Emergent Rock** 
- Submerged Rock** 
- Sand/Silt** 

Figure D-45 General Bathymetric and Substrate Map of Closing Dam M43

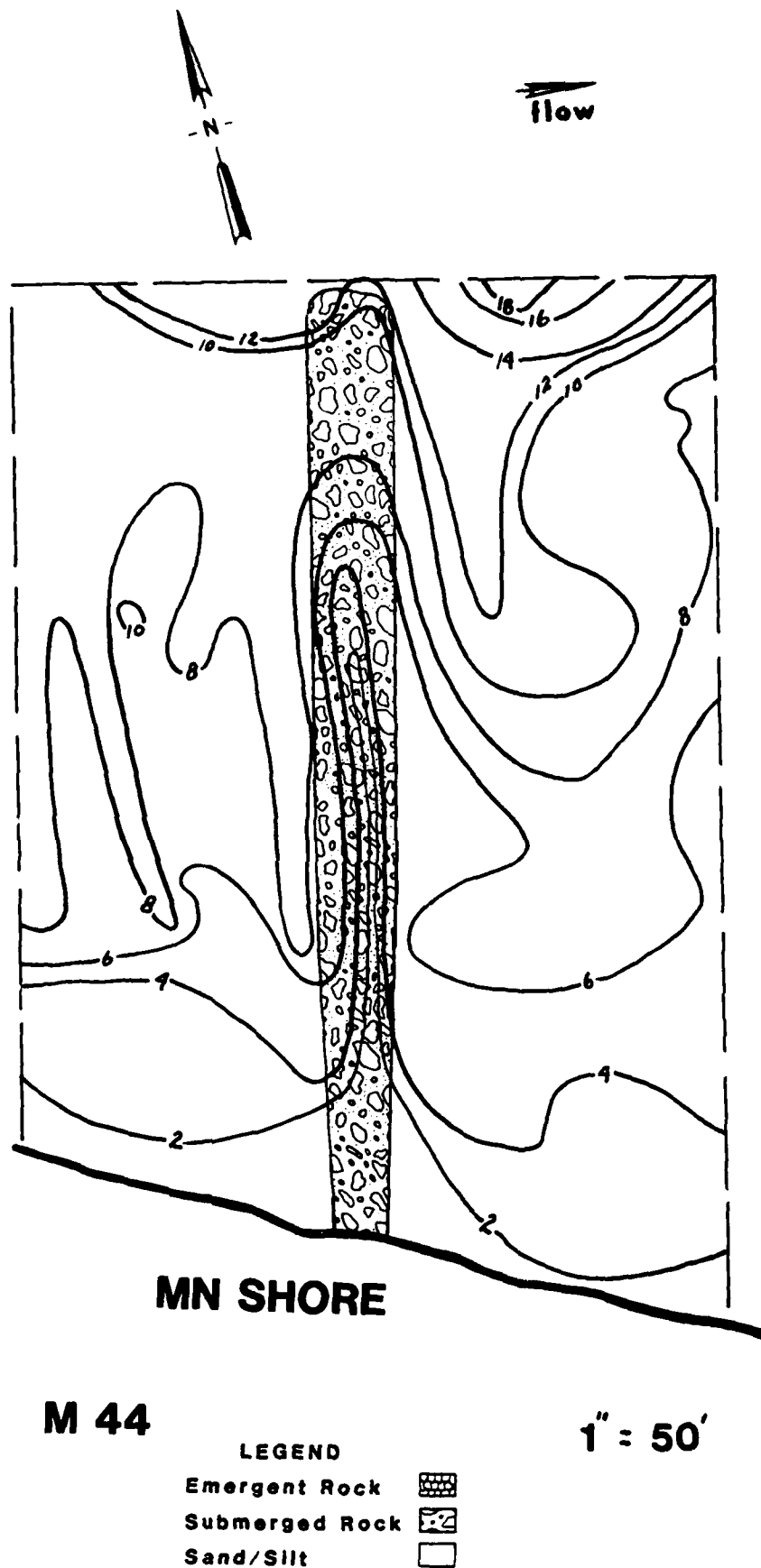


Figure D-46 General Bathymetric and Substrate Map of Wing Dam M44

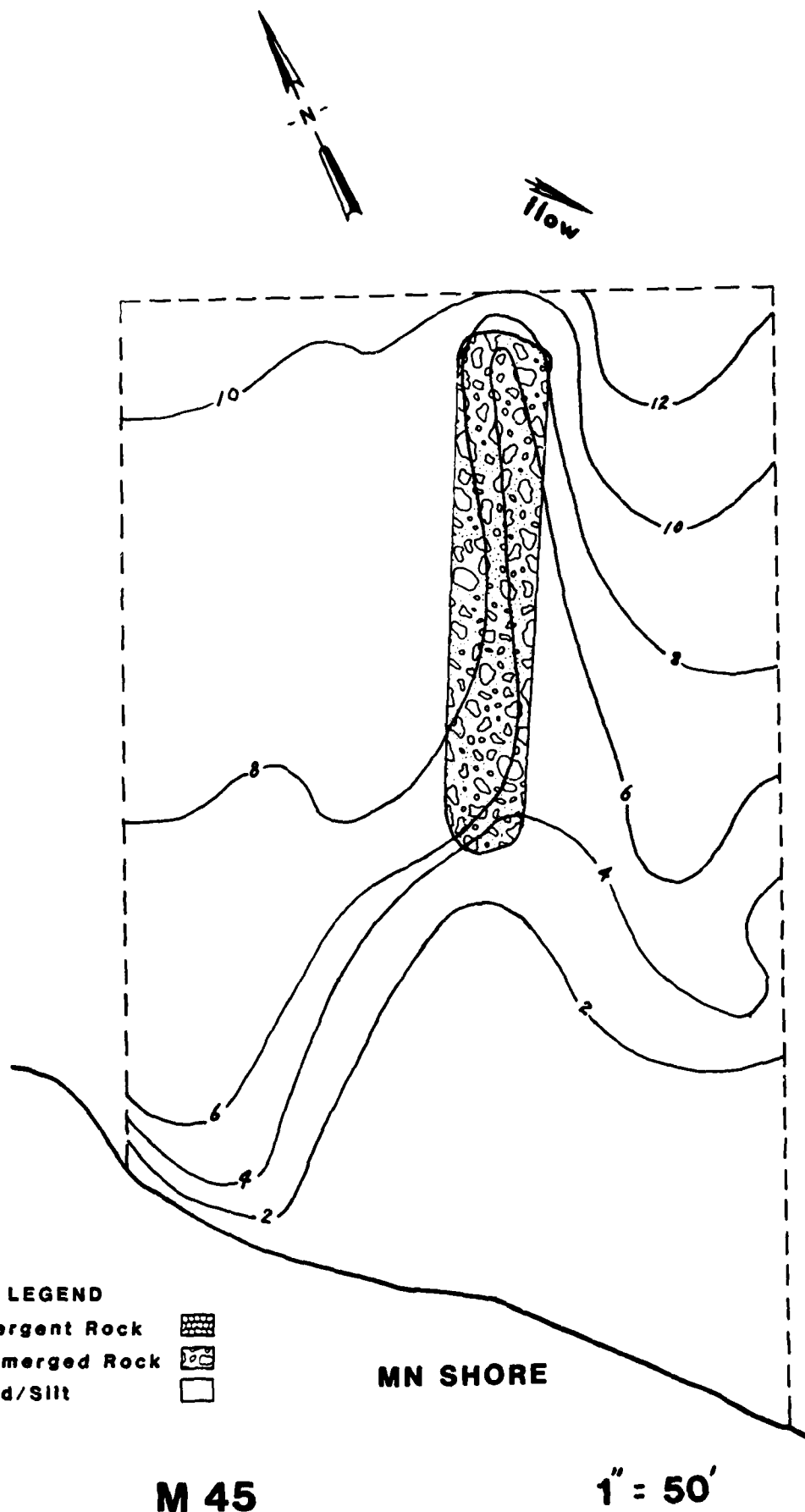


Figure D-47 General Bathymetric and Substrate Map of Wing Dam M45

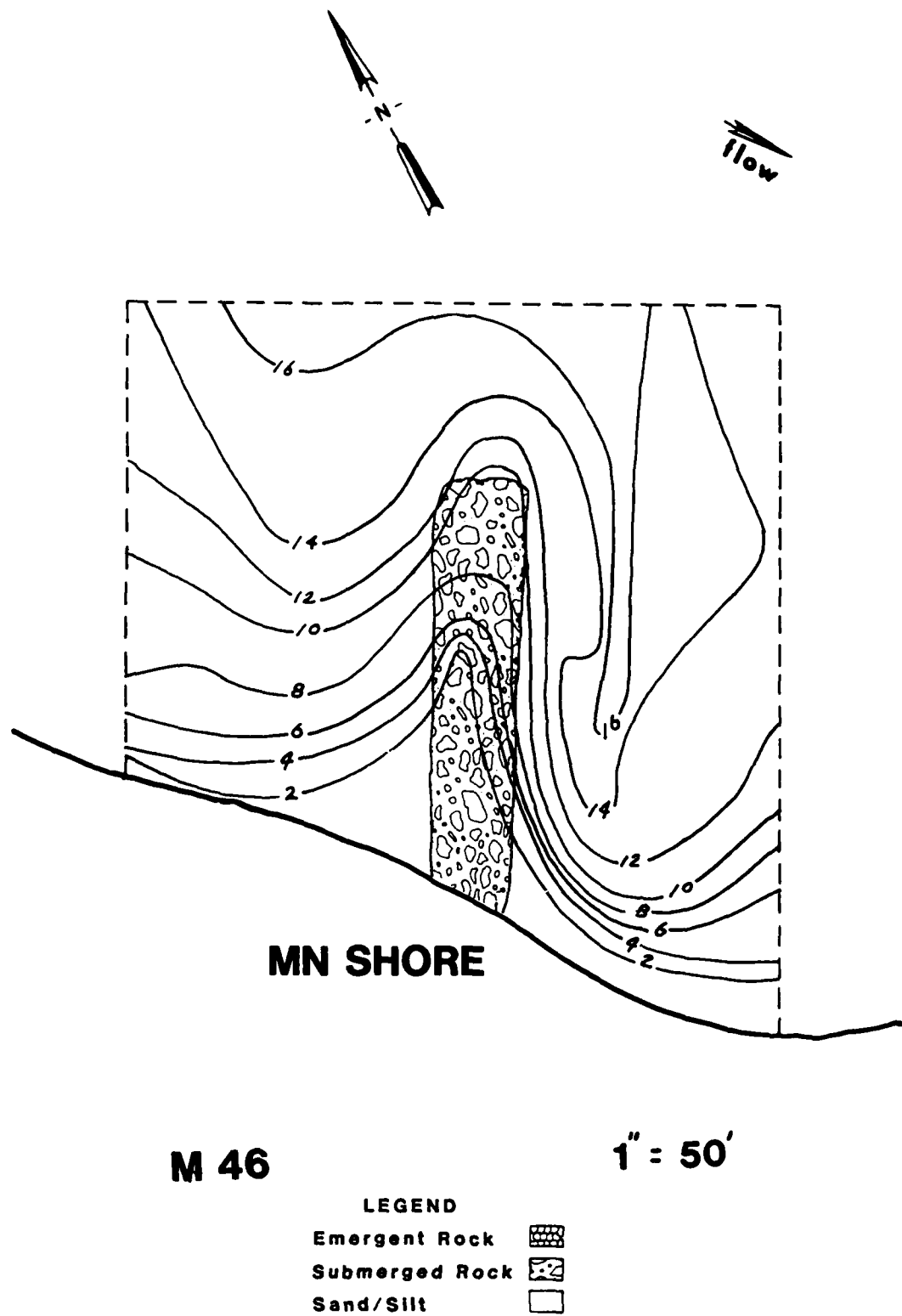


Figure D-48 General Bathymetric and Substrate Map of Wing Dam M46

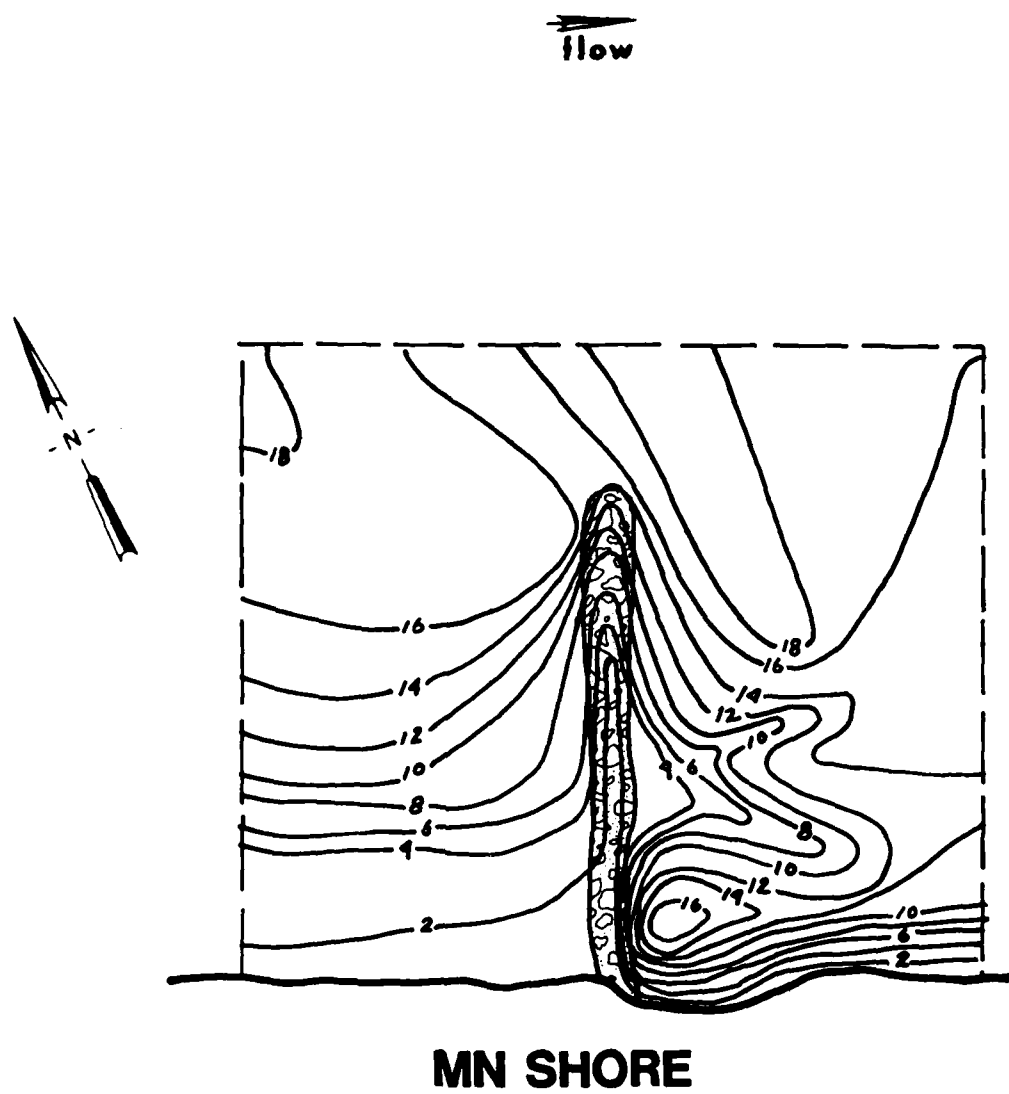


Figure D-49 General Bathymetric and Substrate Map of Wing Dam M47

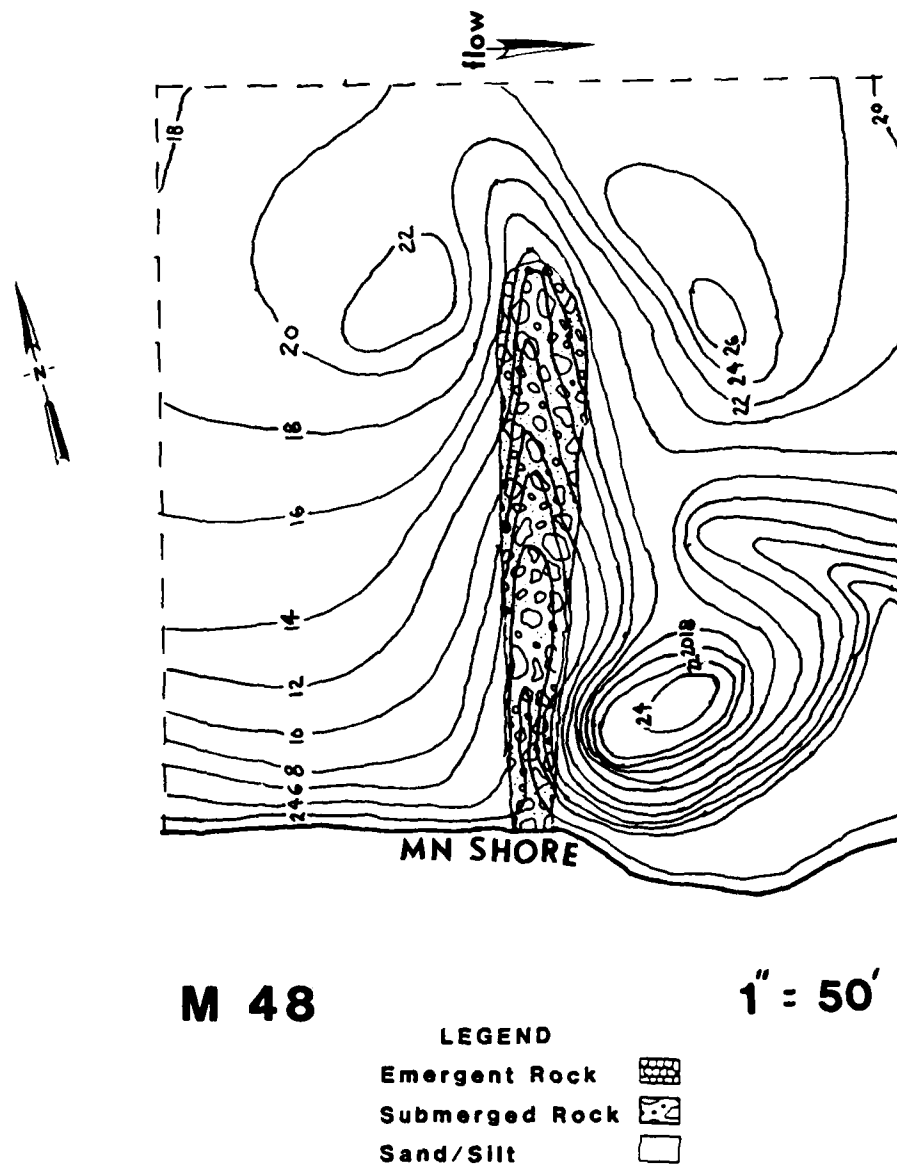
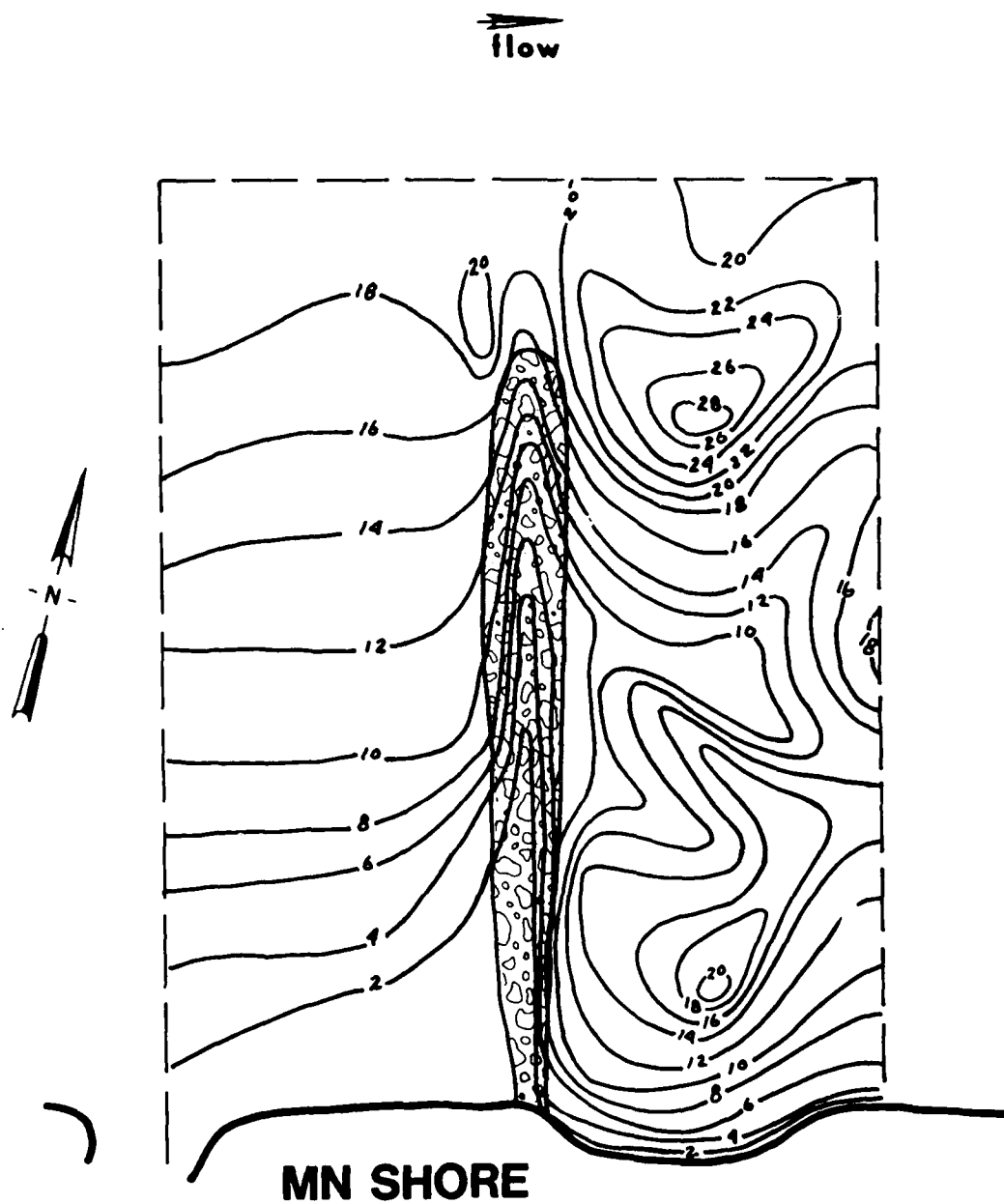


Figure D-50 General Bathymetric and Substrate Map of Wing Dam M48





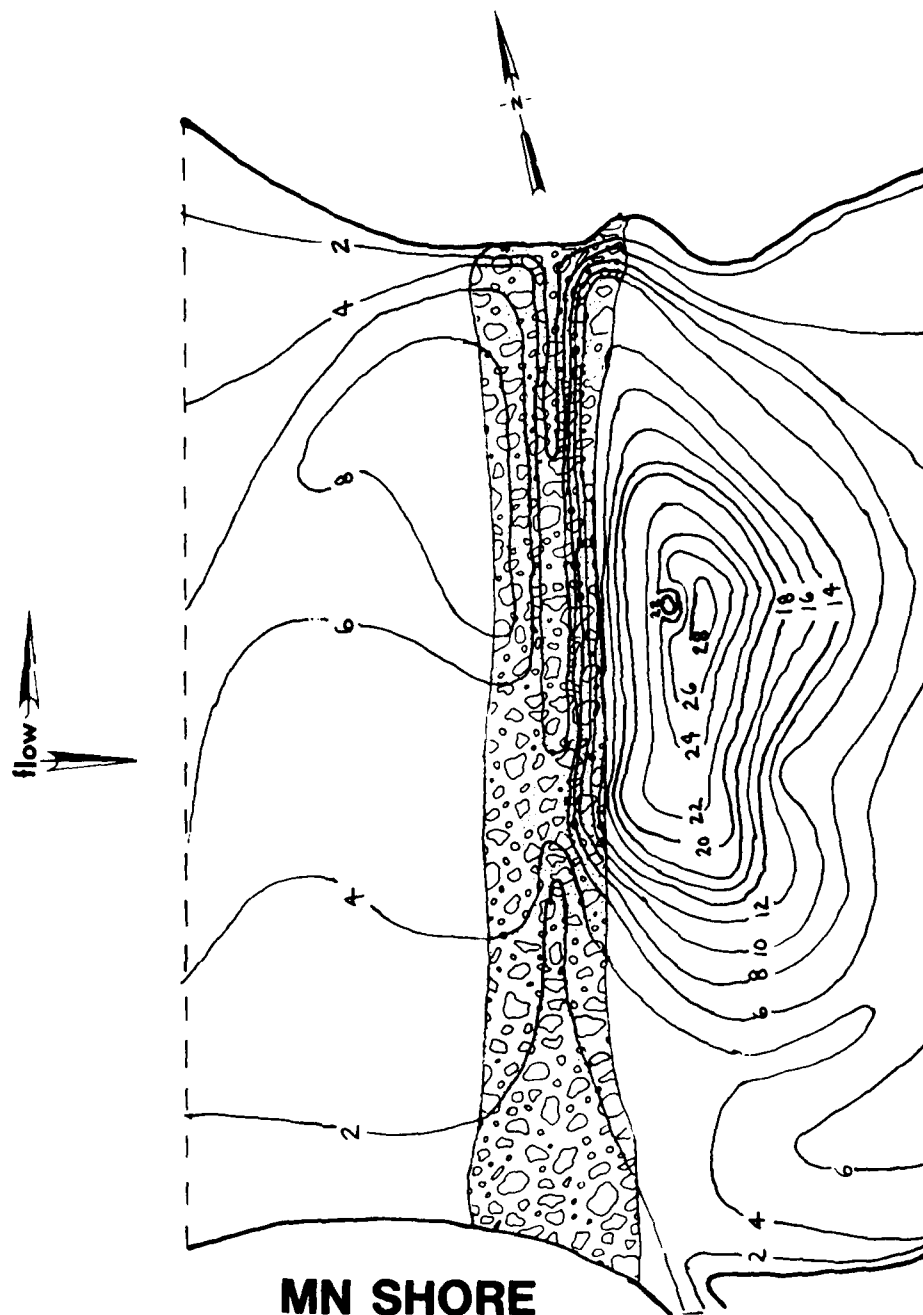
**M 49**

**1" = 50'**

**LEGEND**

- Emergent Rock** 
- Submerged Rock** 
- Sand/Silt** 

Figure D-51 General Bathymetric and Substrate Map of Wing Dam M49



**M 50**

**LEGEND**

Emergent Rock



Submerged Rock



Sand/Silt



**1" = 50'**

Figure D-52 General Bathymetric and Substrate Map of Closing Dam M50

AD-A156 691

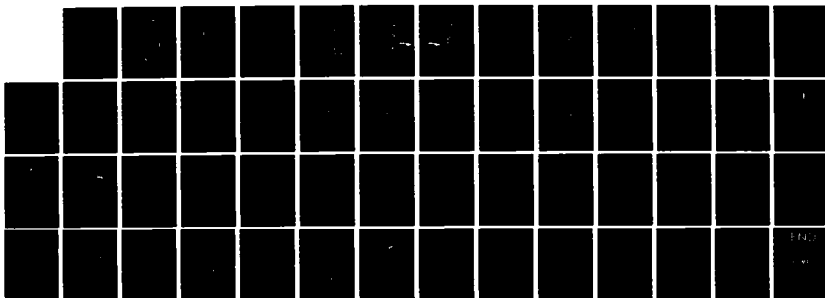
PHYSICAL AND BIOLOGICAL INVESTIGATIONS OF THE MAIN  
CHANNEL BORDER HABITAT. (U) CORPS OF ENGINEERS ST PAUL  
MN ST PAUL DISTRICT D D ANDERSON ET AL. DEC 83

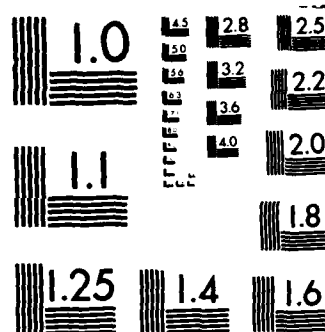
2/2

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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

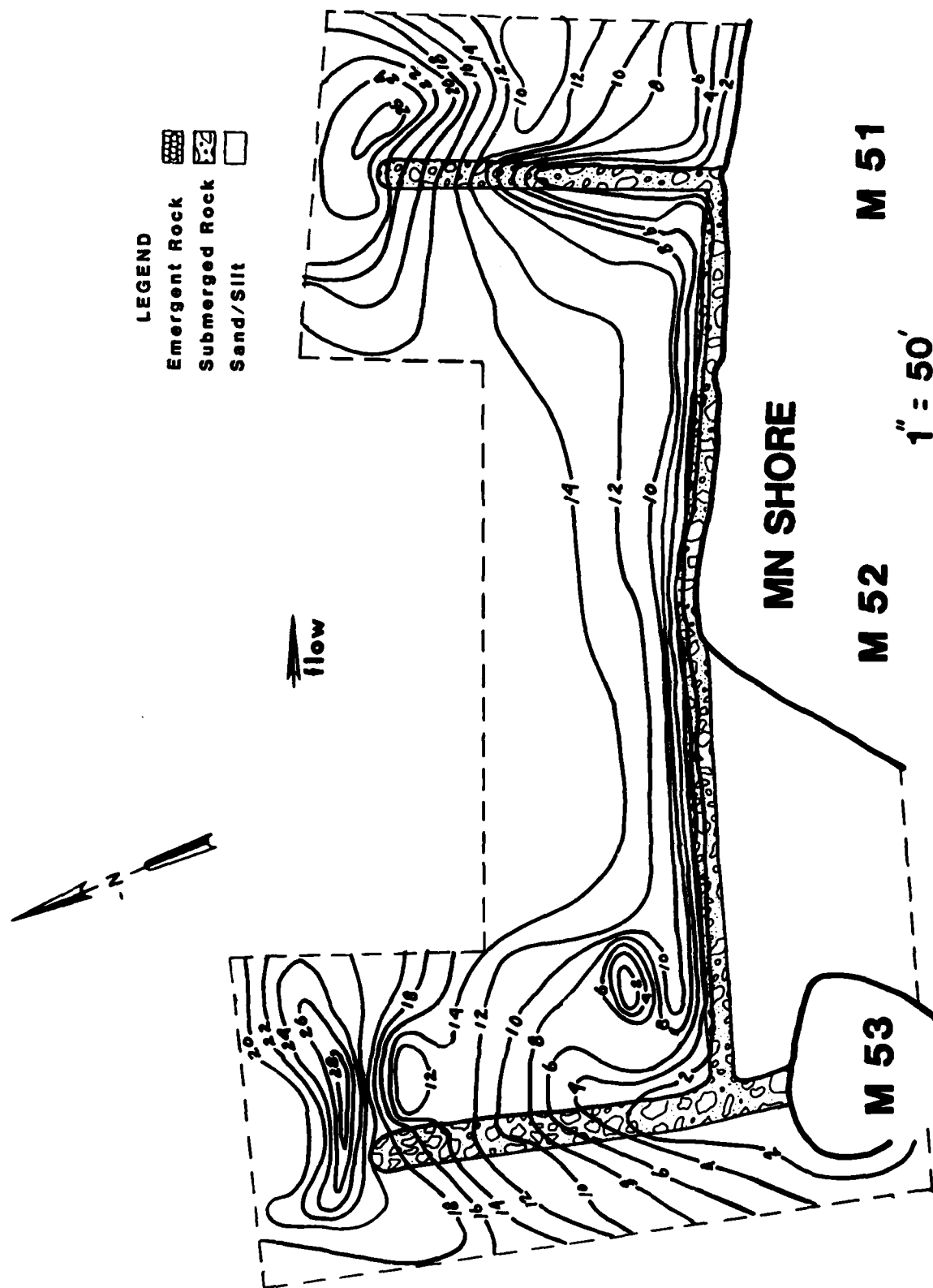


Figure D-53 General Bathymetric and Substrate Map of Wing Dams M51, M53, Closing Dam M52

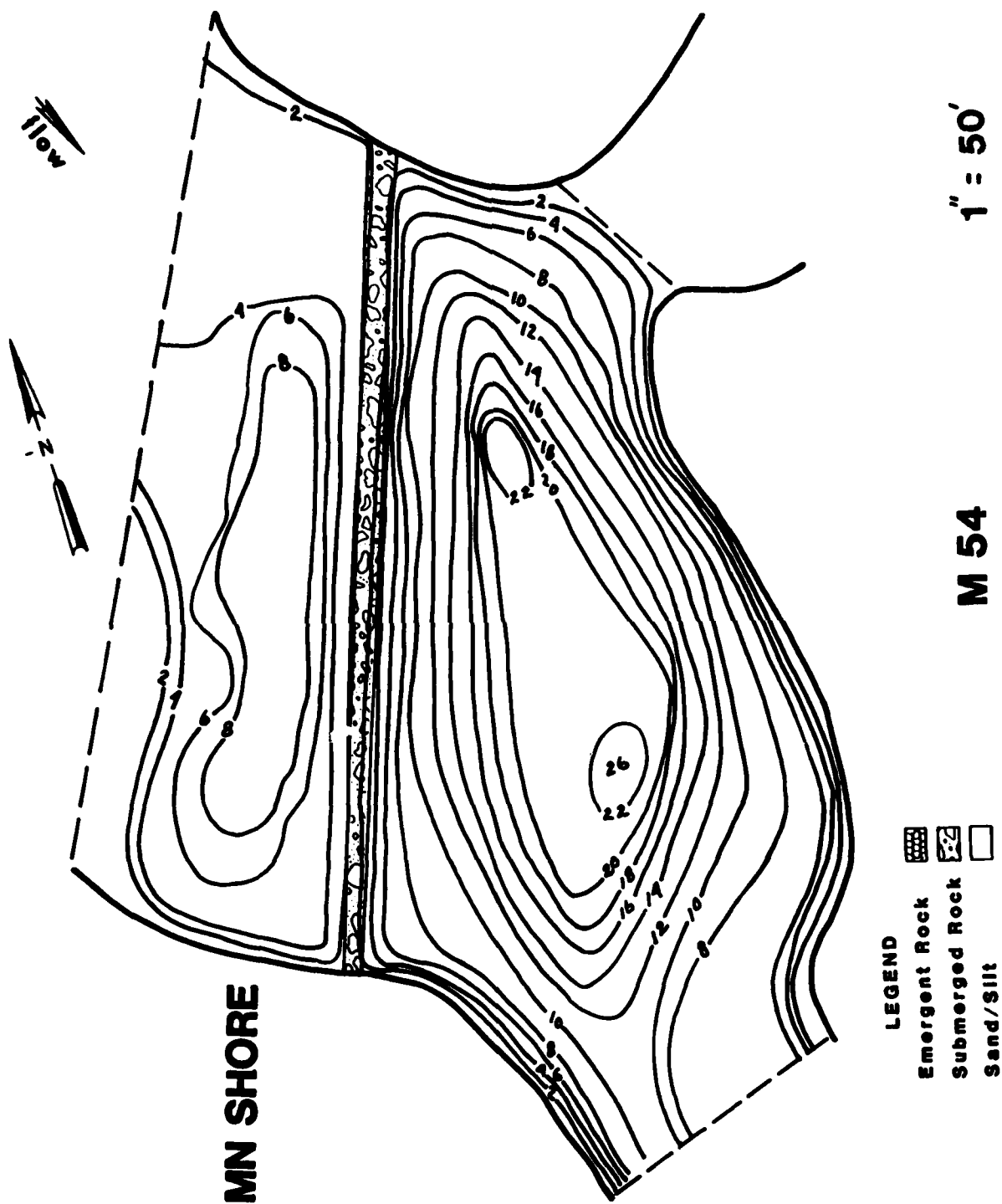


Figure D-54 General Bathymetric and Substrate Map of Closing Dam M54

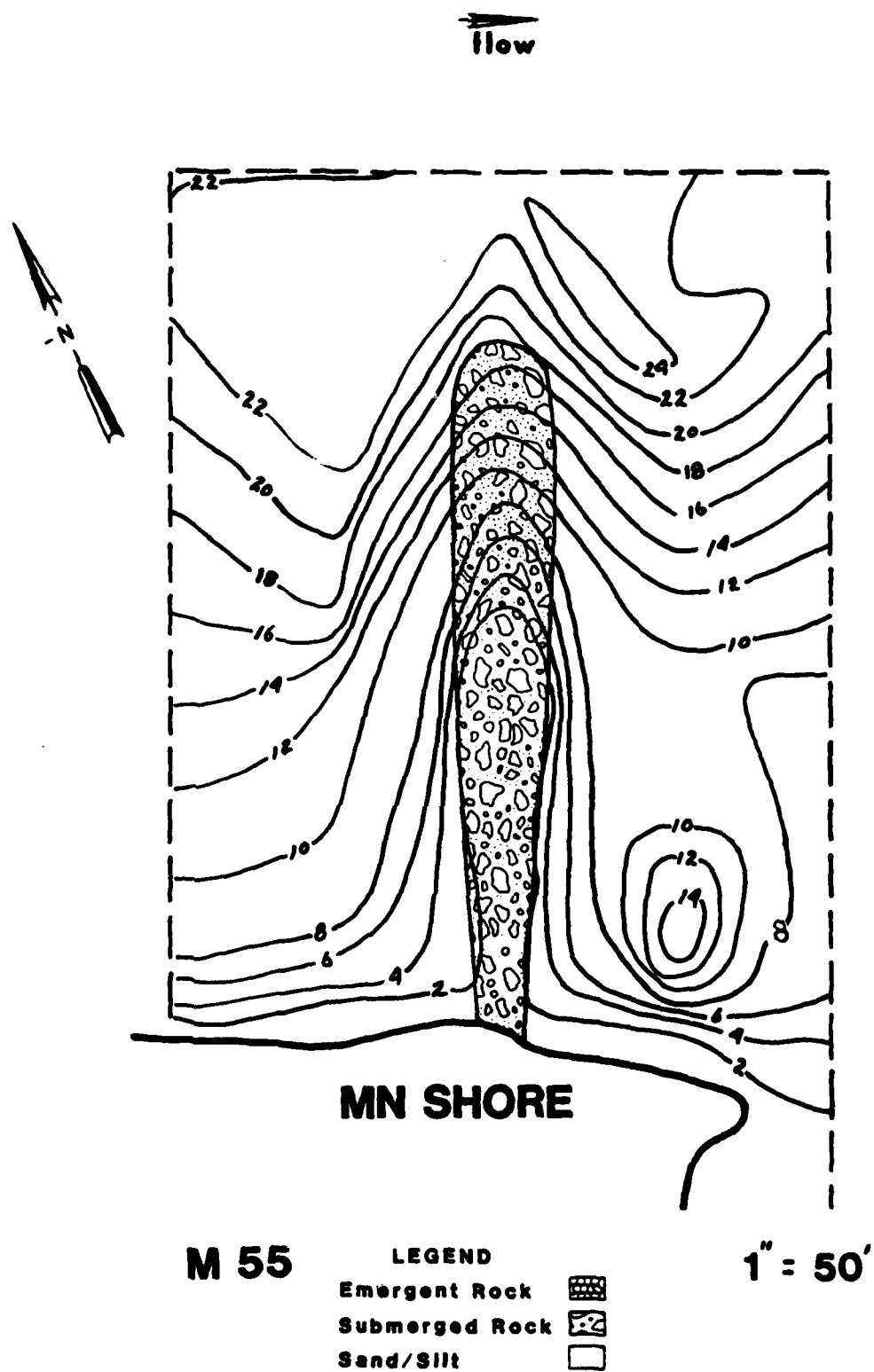
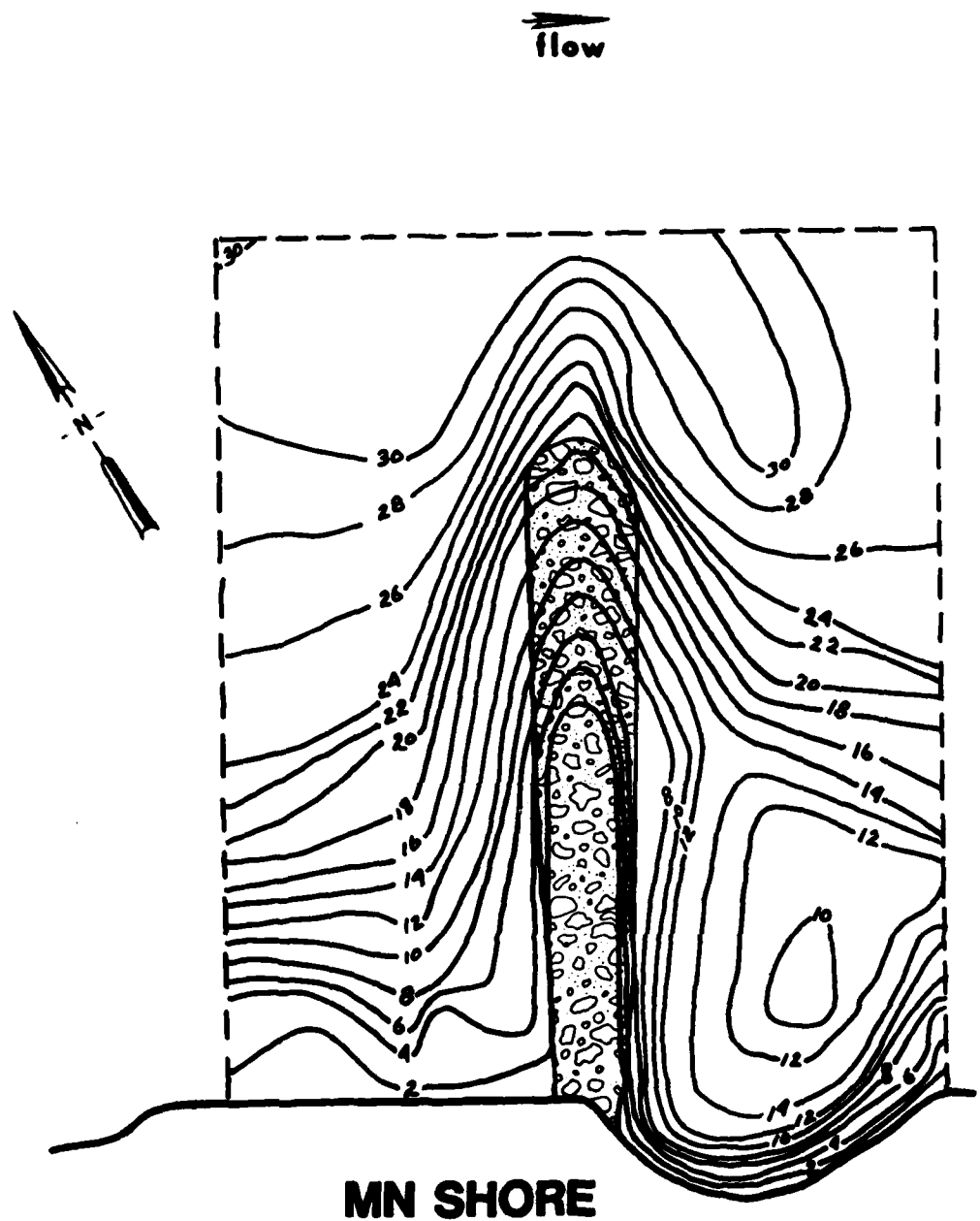


Figure D-55 General Bathymetric and Substrate Map of Wing Dam M55



**M 56**

**LEGEND**

Emergent Rock	
Submerged Rock	
Sand/Silt	

**1" = 50'**

Figure D-56 General Bathymetry and Substrate Map of Wing Dam M56



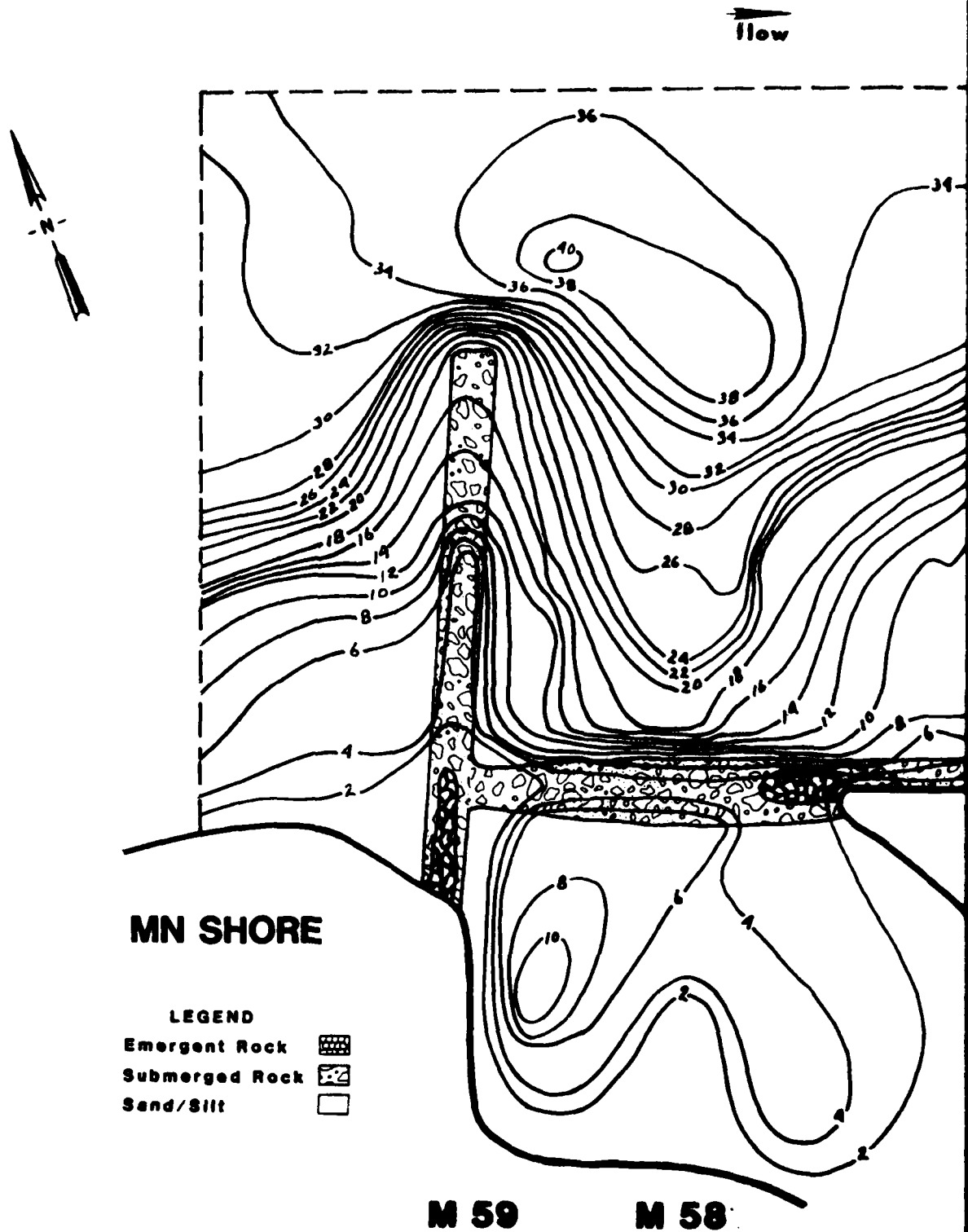
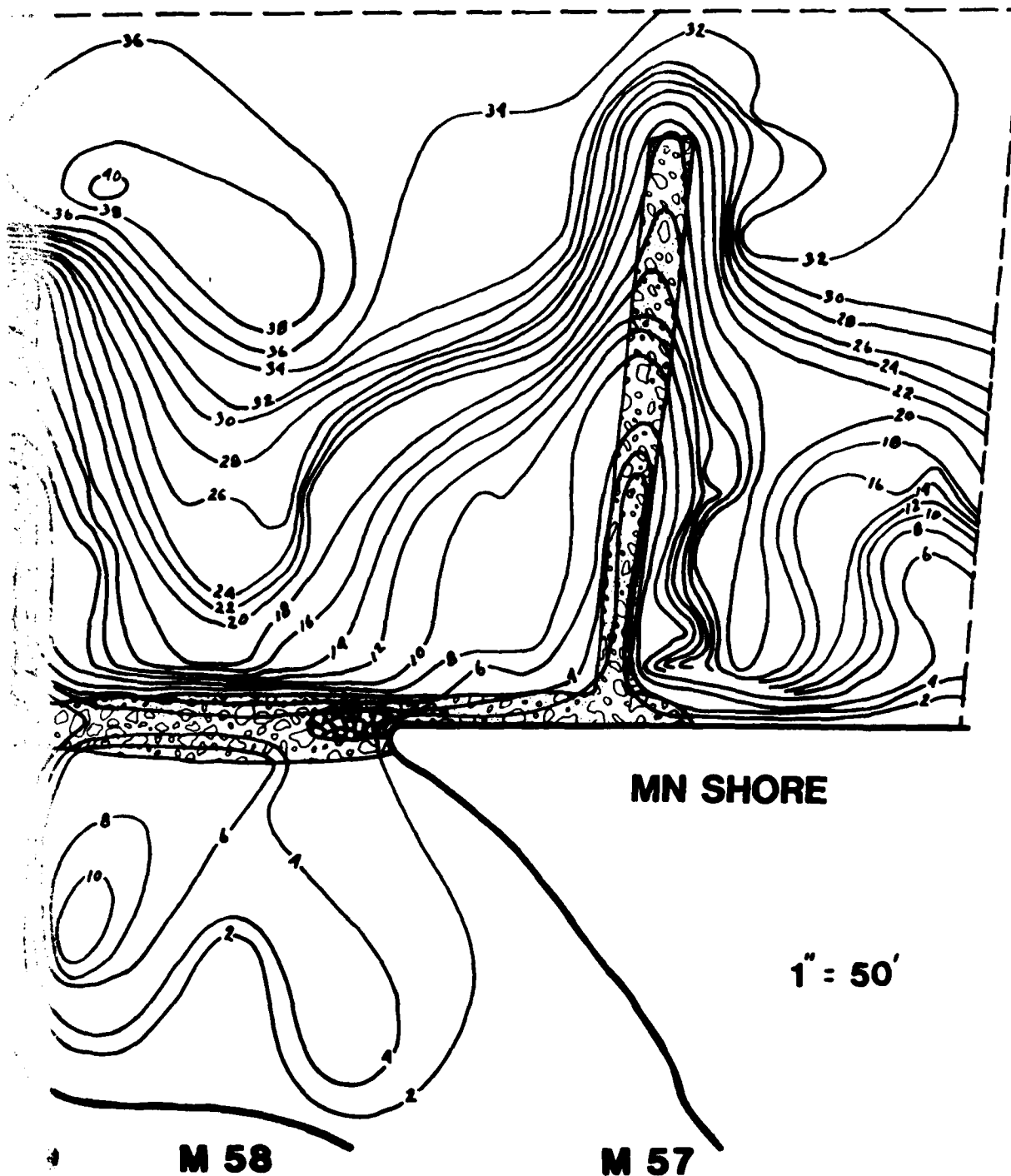


Figure D-57 General Bathymetric and Substrate Map of Wing Dam M57, Closing Dam M58

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flow



Map of Wing Dam M57, Closing Dam M58 and Wing Dam M59

90

242

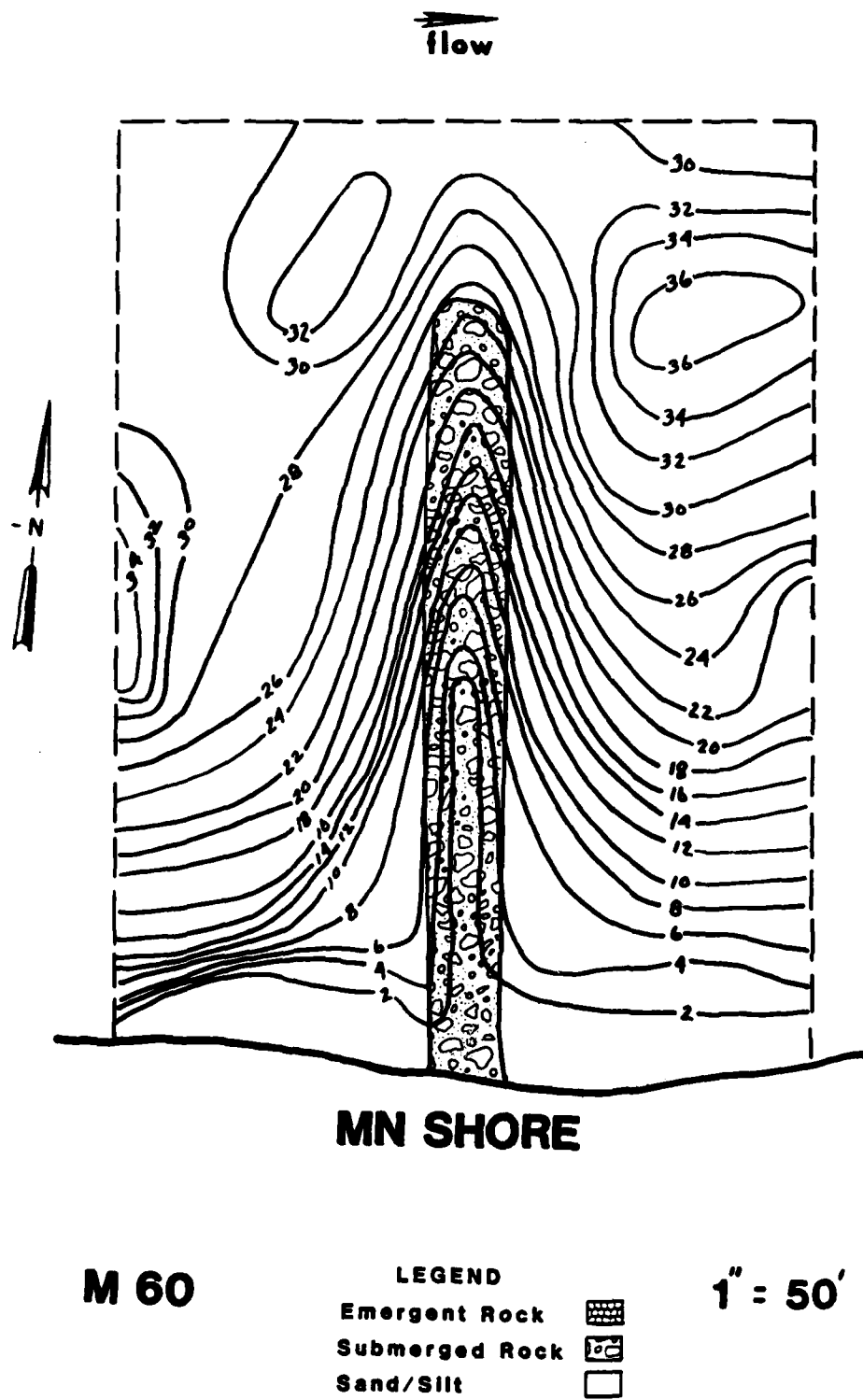


Figure D-58 General Bathymetric and Substrate Map of Wing Dam M60

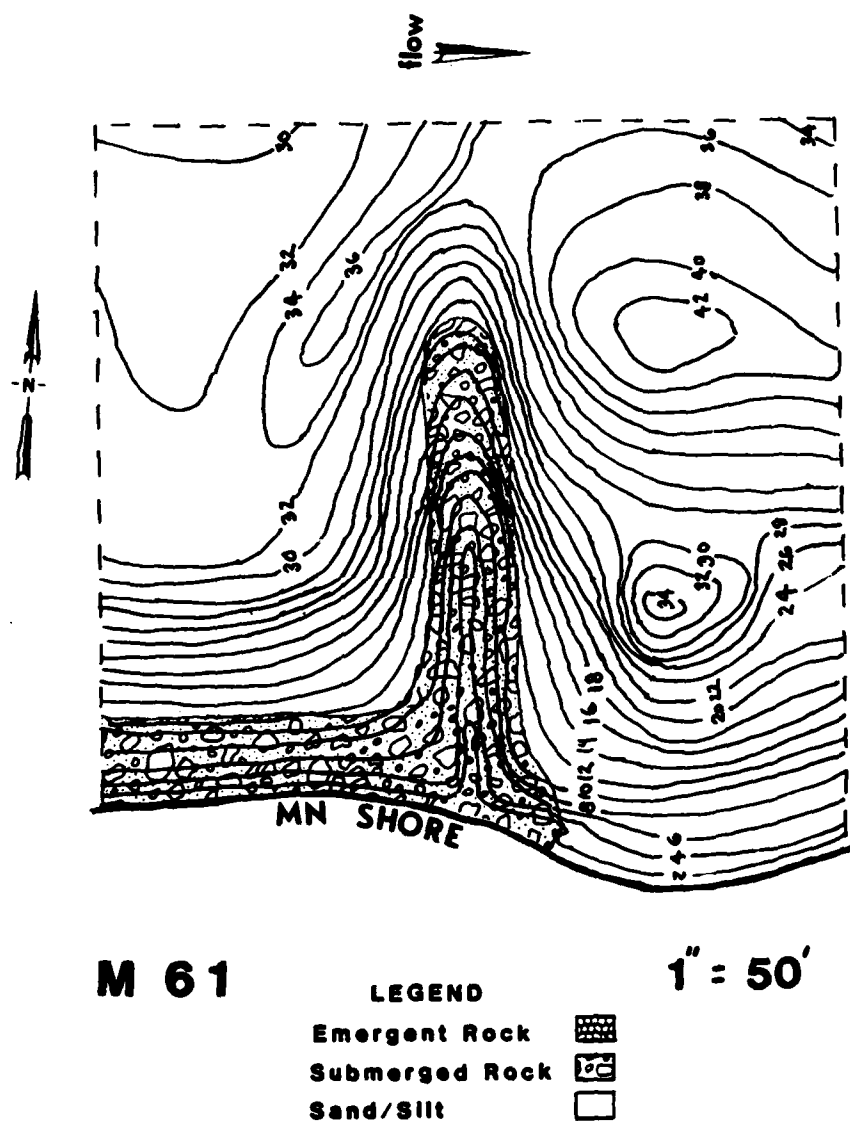


Figure D-59 General Bathymetric and Substrate Map of Wing Dam M61

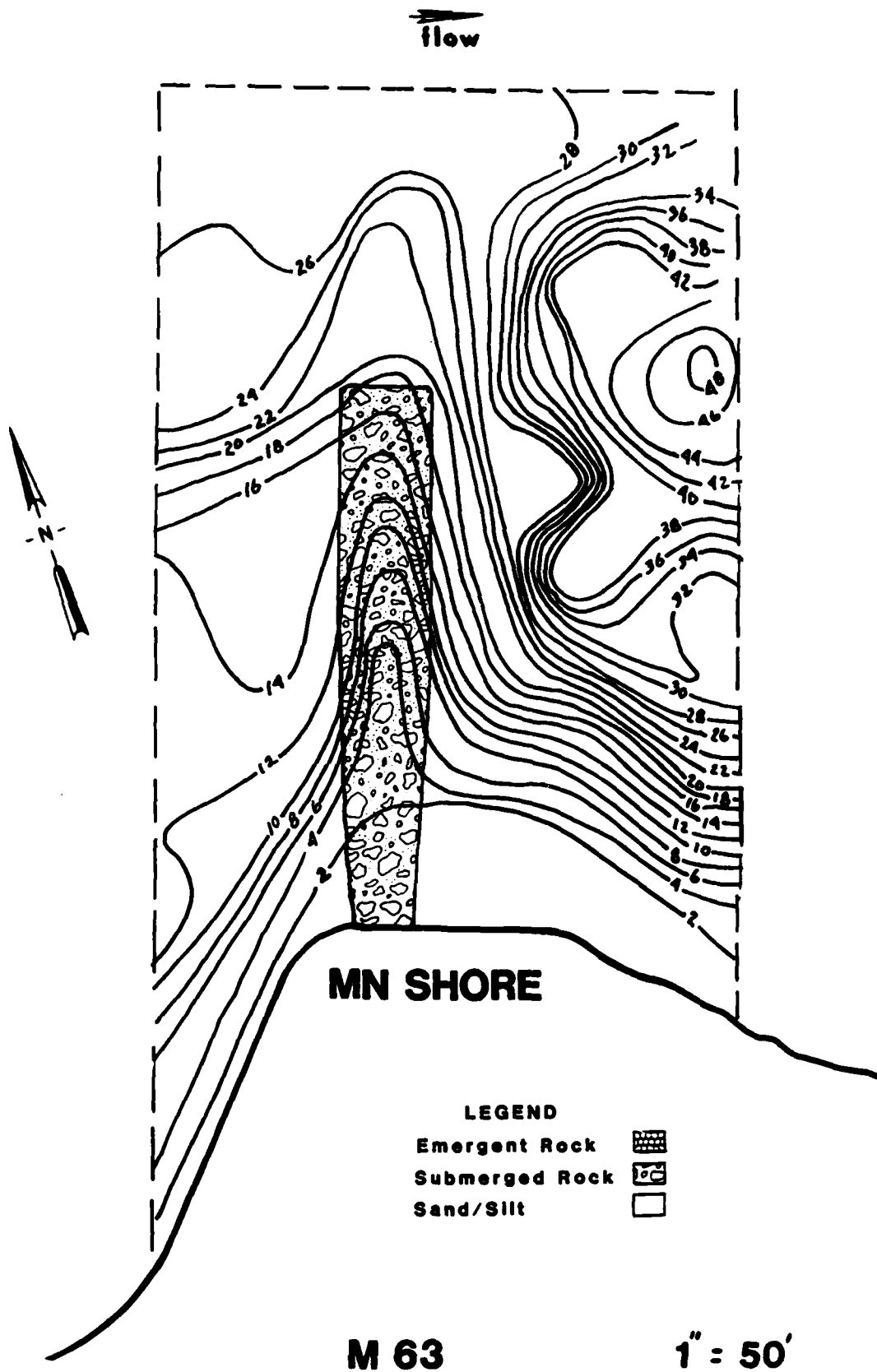


Figure D-60 General Bathymetric and Substrate Map of Wing Dam M63

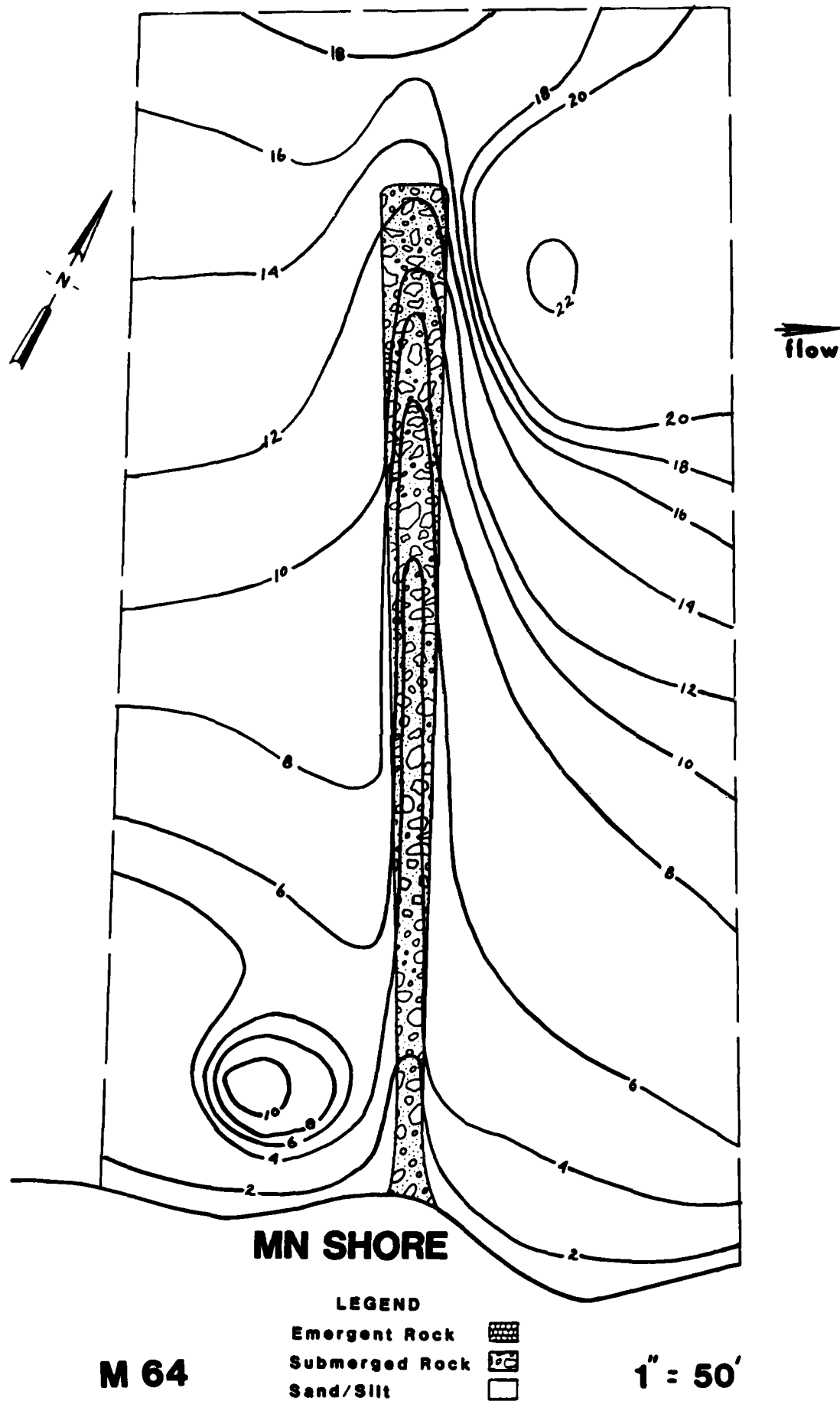


Figure D- 61 General Bathymetric and Substrate Map of Wing Dam M64

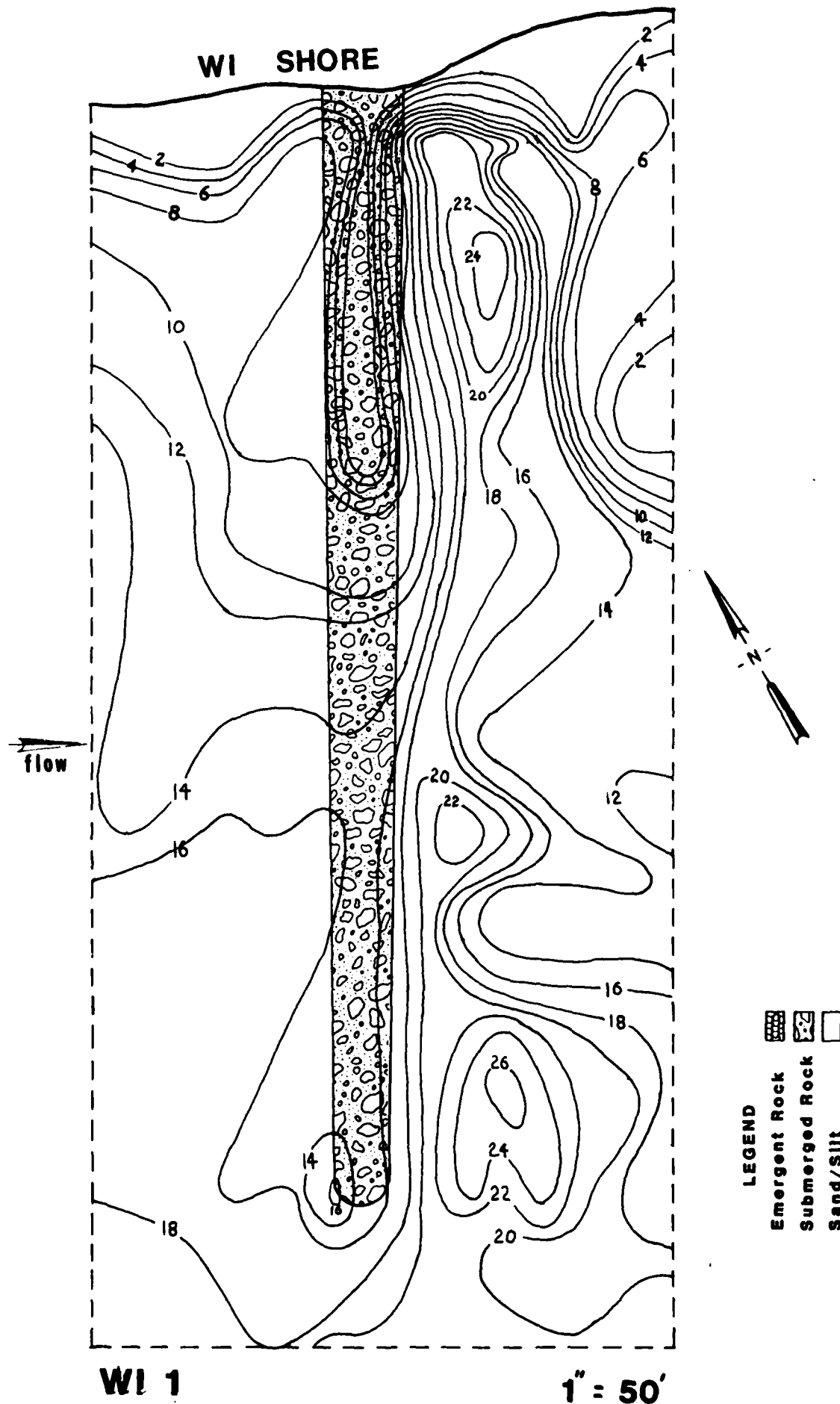


Figure D- 62 General Bathymetric and Substrate Map of Wing Dam WI1

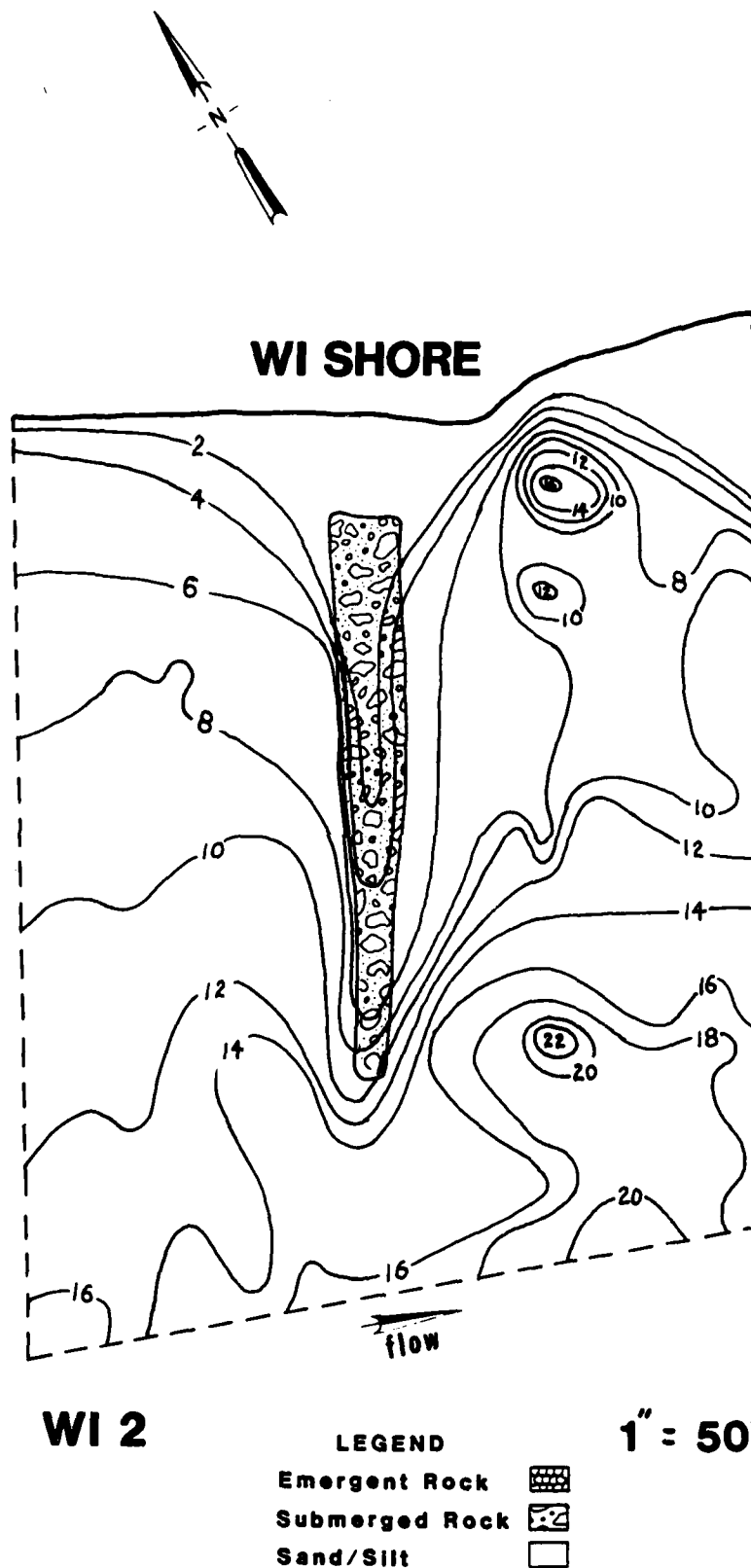


Figure D- 63 General Bathymetric and Substrate Map of Wing Dam WI2



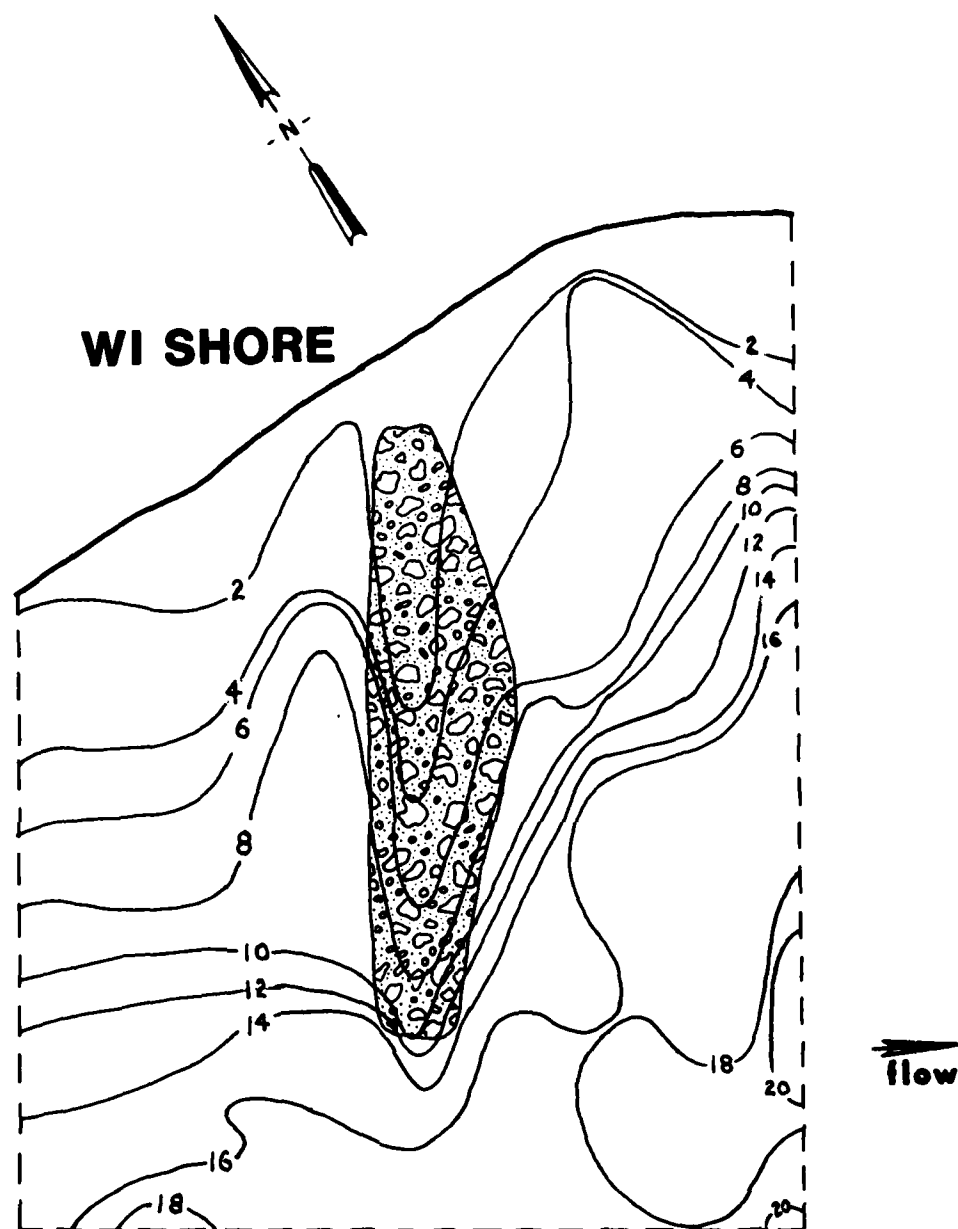


Figure D- 64 General Bathymetric and Substrate Map of Wing Dam WI3

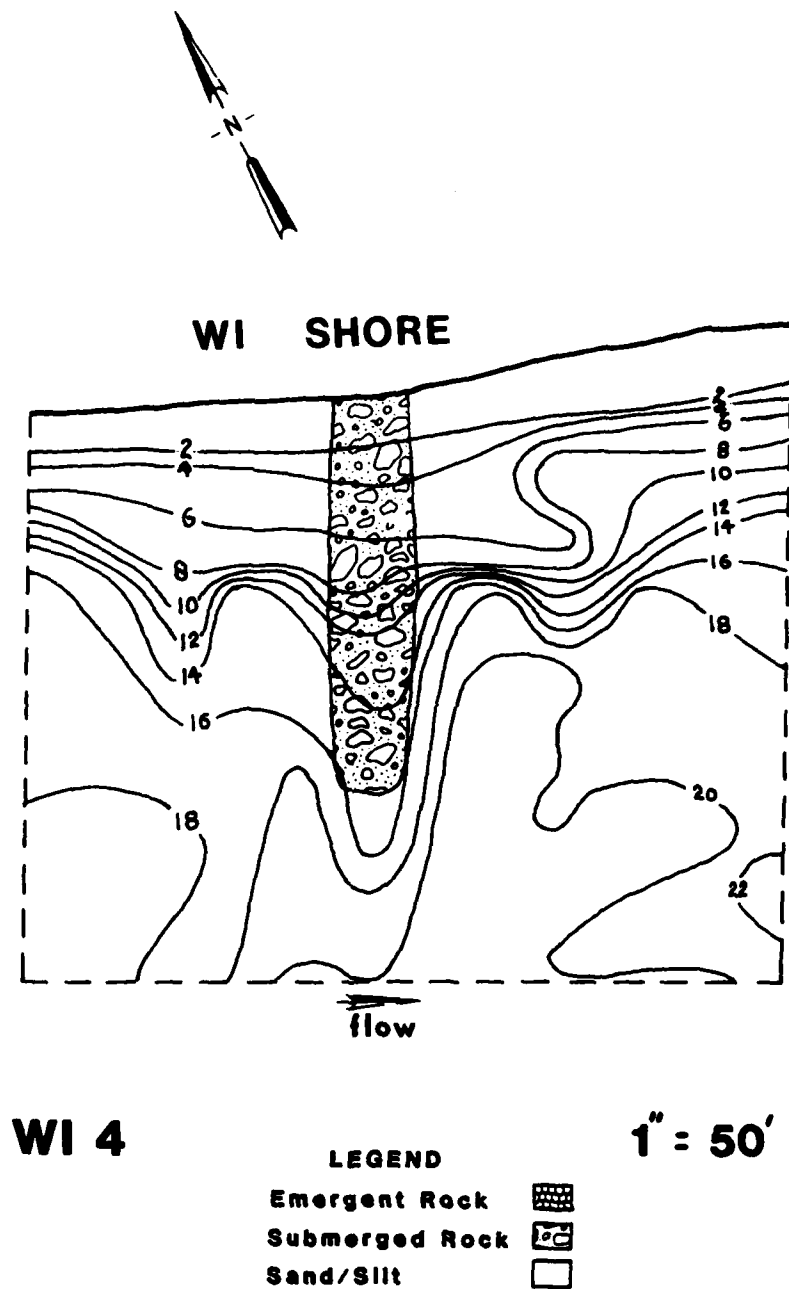
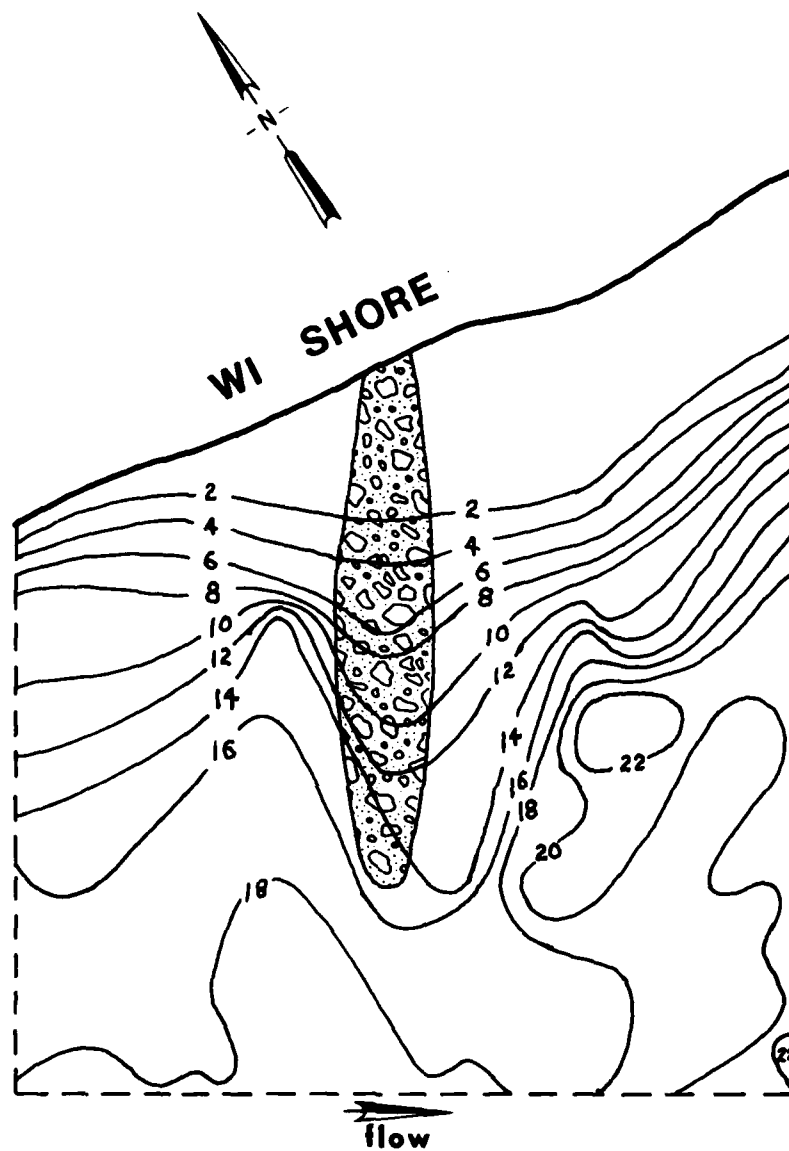


Figure D- 65 General Bathymetric and Substrate Map of Wing Dam WI4



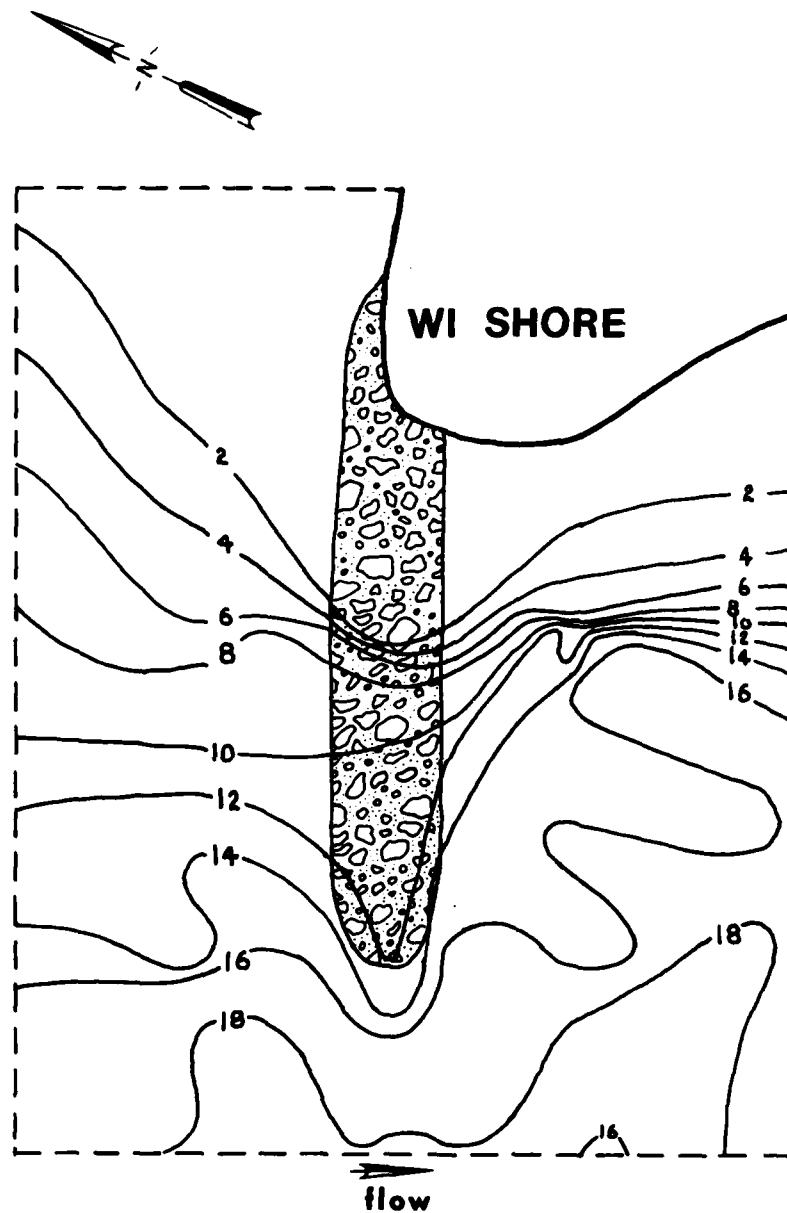
WI 5.

LEGEND

- Emergent Rock 
- Submerged Rock 
- Sand/Silt 

1" = 50'

Figure D- 66 General Bathymetric and Substrate Map of Wing Dam WI5



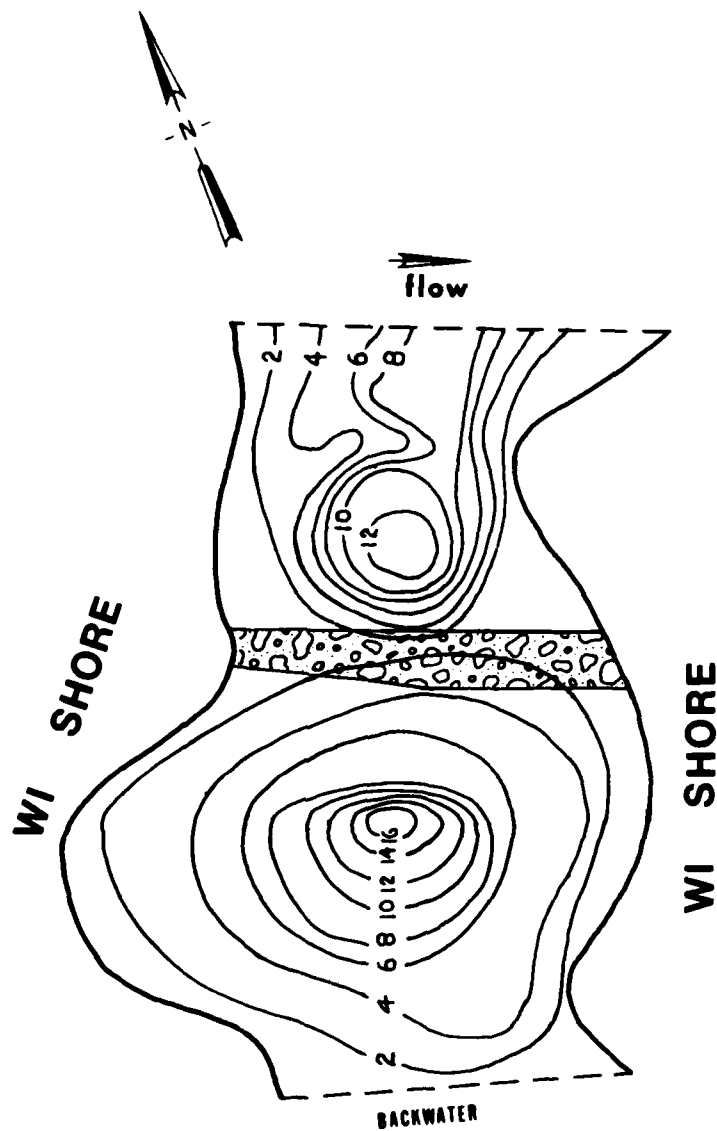
**WI 6**

**LEGEND**

Emergent Rock	
Submerged Rock	
Sand/Silt	

**1" = 50'**

Figure D- 67 General Bathymetric and Substrate Map of Wing Dam WI6



**WI 7**

**1" = 50'**

**LEGEND**

- |                       |   |
|-----------------------|---|
| <b>Emergent Rock</b>  |  |
| <b>Submerged Rock</b> |  |
| <b>Sand/Silt</b>      |  |

Figure D-68 General Bathymetric and Substrate Map of Closing Dam WI7

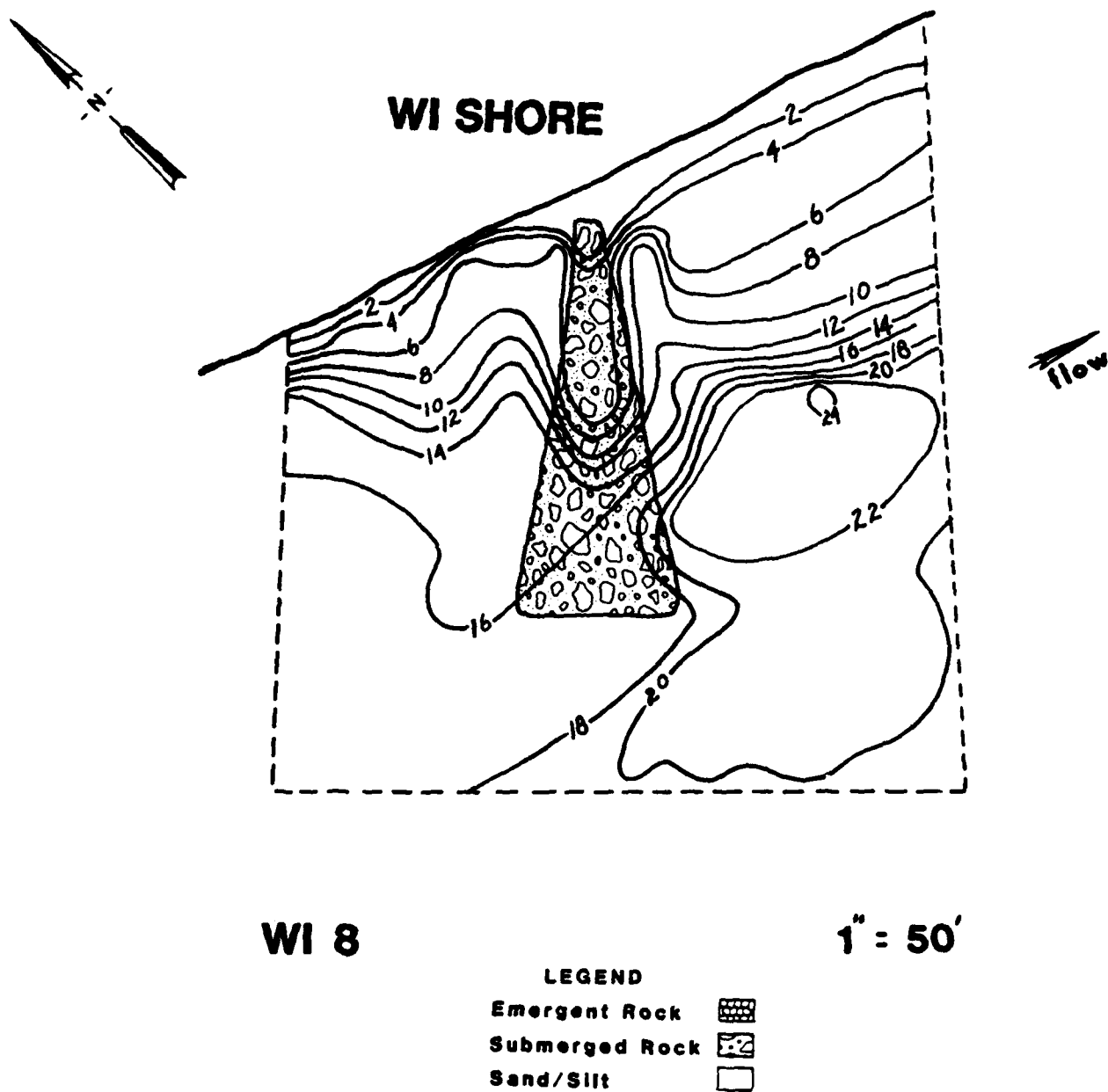


Figure D-69 General Bathymetric and Substrate Map of Wing Dam WI8

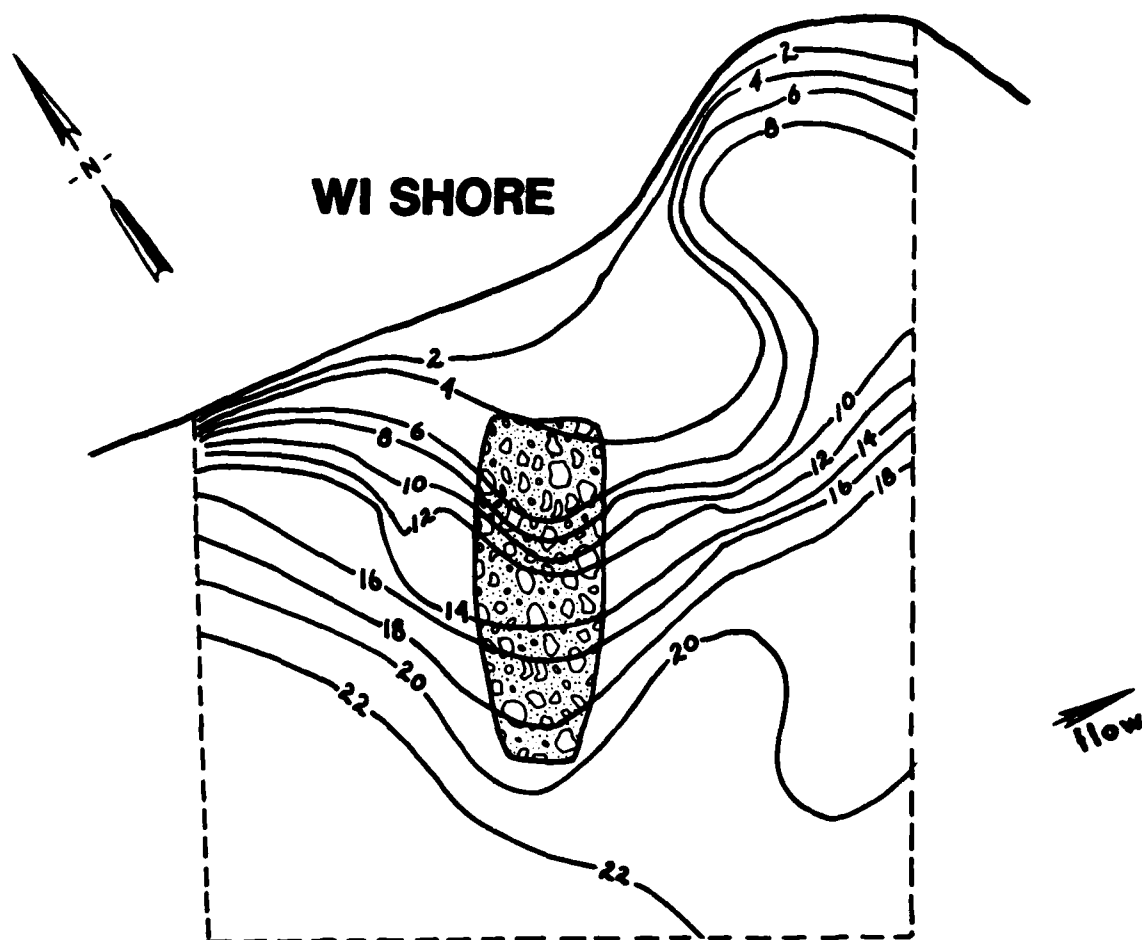
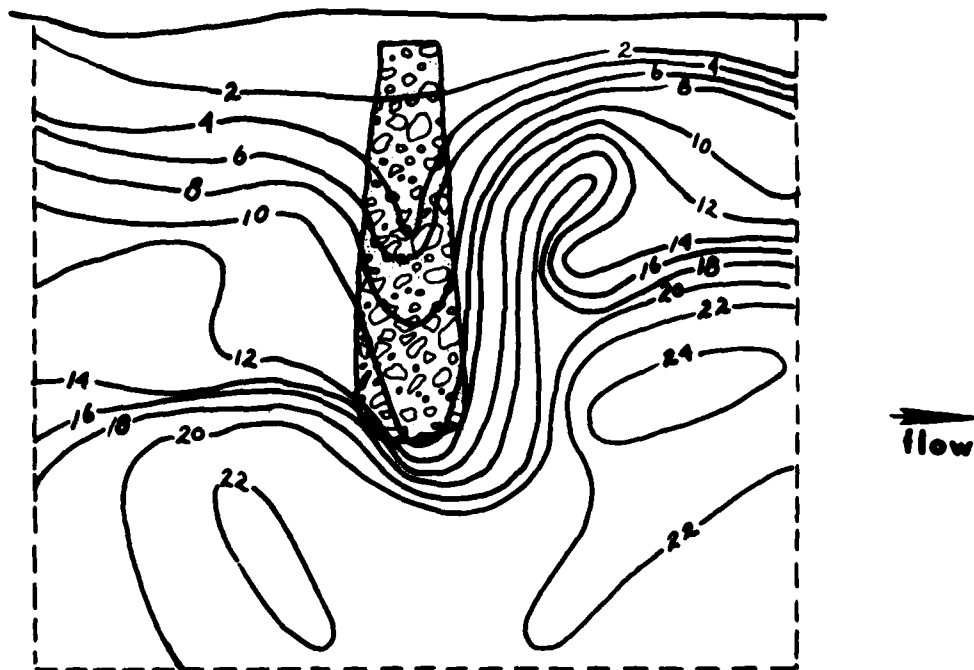


Figure D-70 General Bathymetric and Substrate Map of Wing Dam WI10



## WI SHORE



**WI 11**

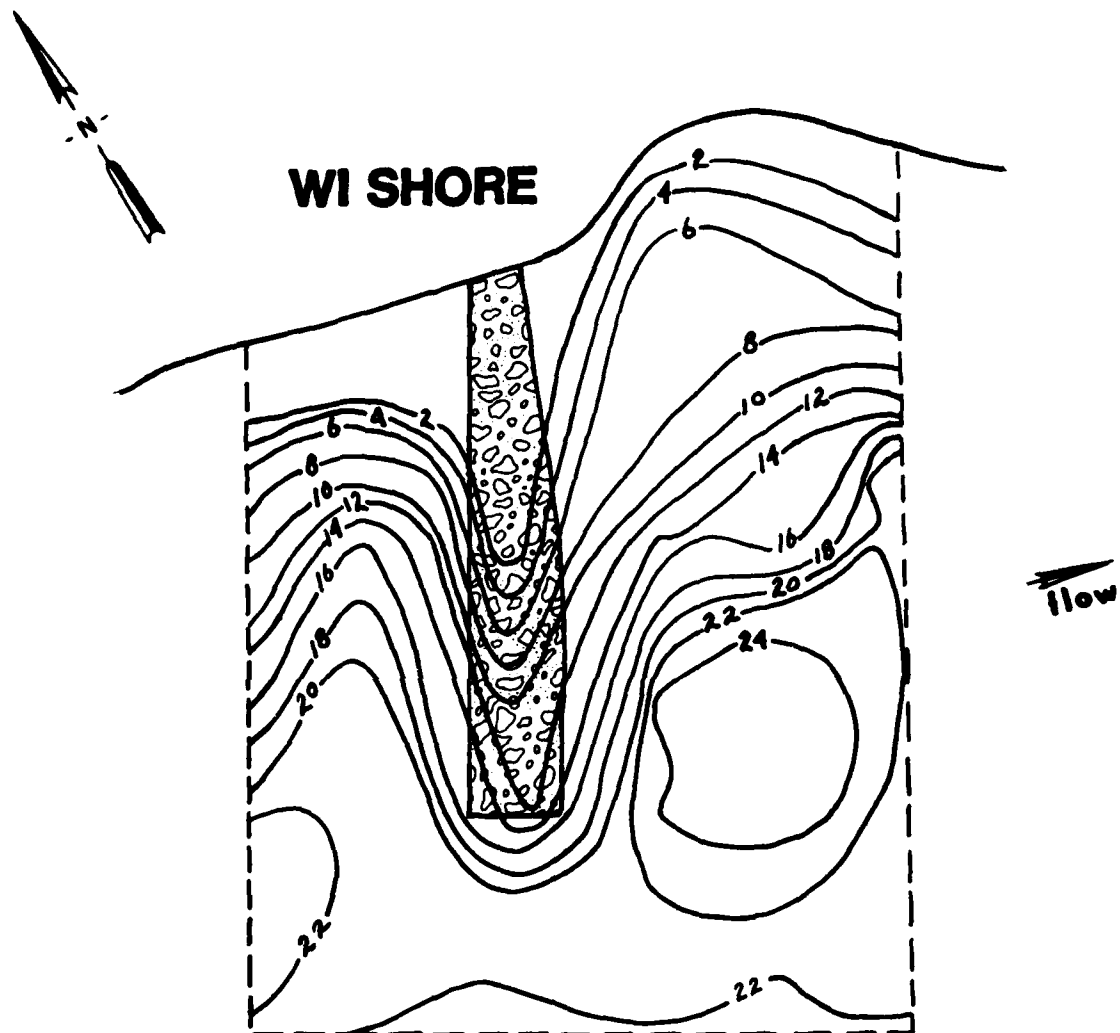
### LEGEND

- Emergent Rock 
- Submerged Rock 
- Sand/Silt 

**1" = 50'**

Figure D-71 General Bathymetric and Substrate Map of Wing Dam WI11





**WI 12**

**1" = 50'**

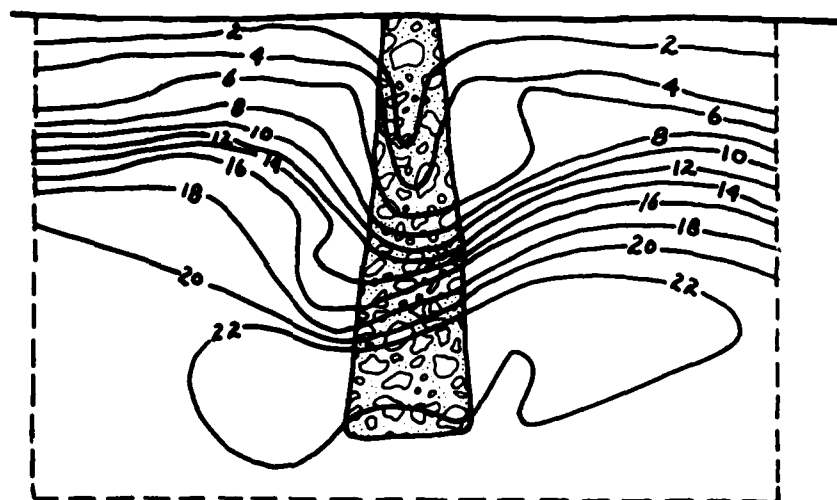
**LEGEND**

<b>Emergent Rock</b>	
<b>Submerged Rock</b>	
<b>Sand/Silt</b>	

Figure D-72 General Bathymetric and Substrate Map of Wing Dam WI12



## WI SHORE



**WI 13**

**1" = 50'**

### LEGEND

Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-75 General Bathymetric and Substrate Map of Wing Dam WI13

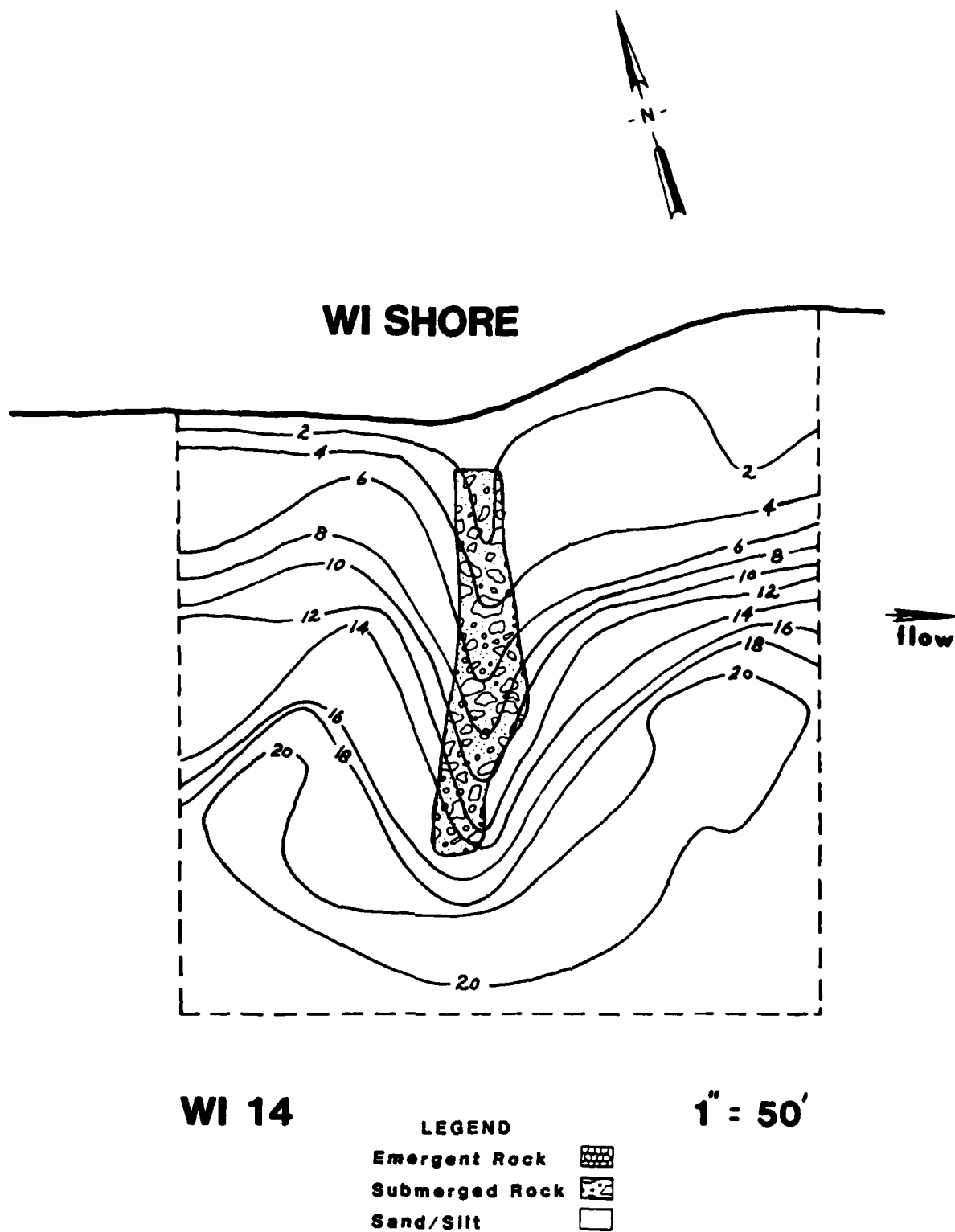


Figure D-74 General Bathymetric and Substrate Map of Wing Dam WI14

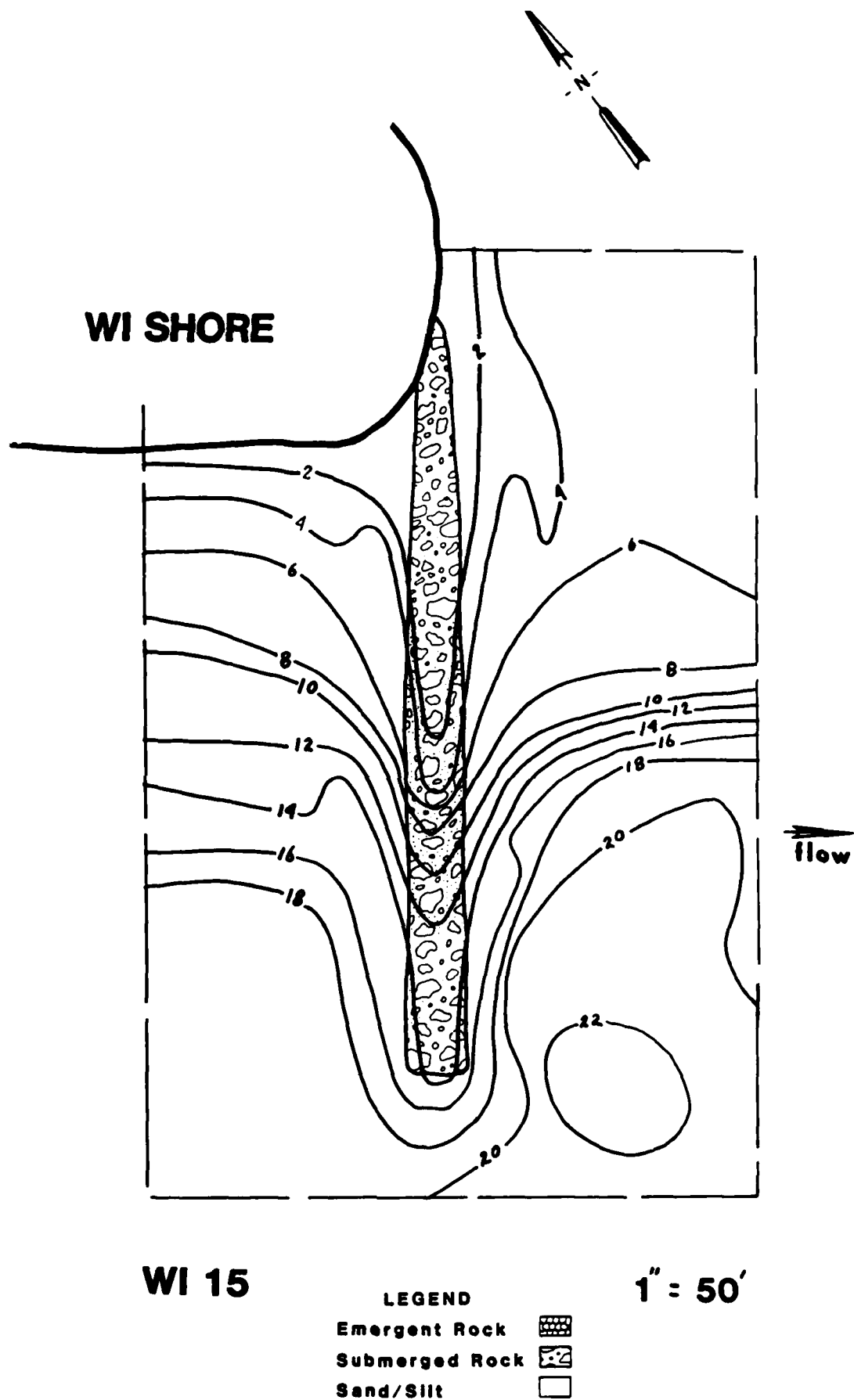


Figure D-75 General Bathymetric and Substrate Map of Wing Dam WI15

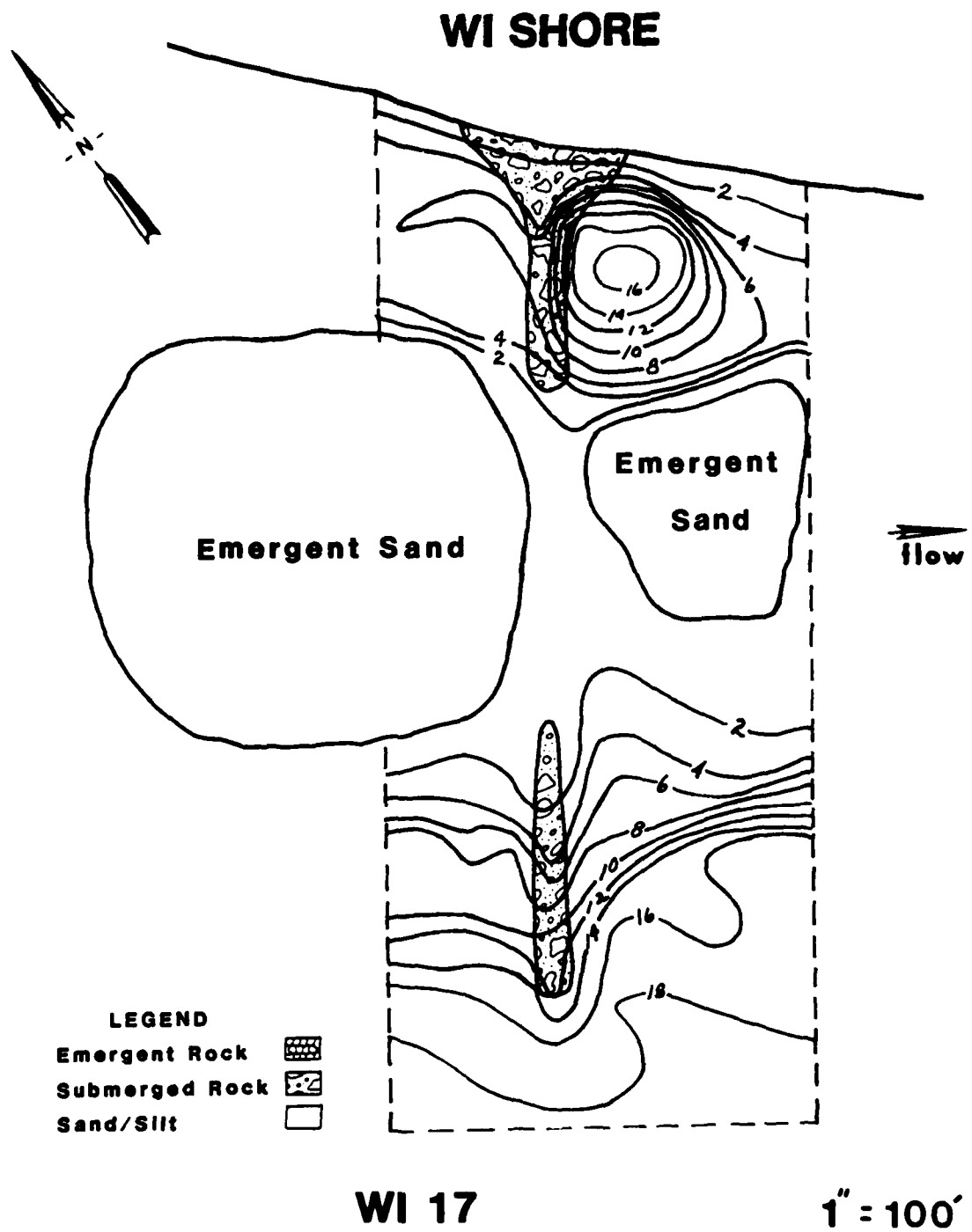


Figure D-76 General Bathymetric and Substrate Map of Wing Dam WI17

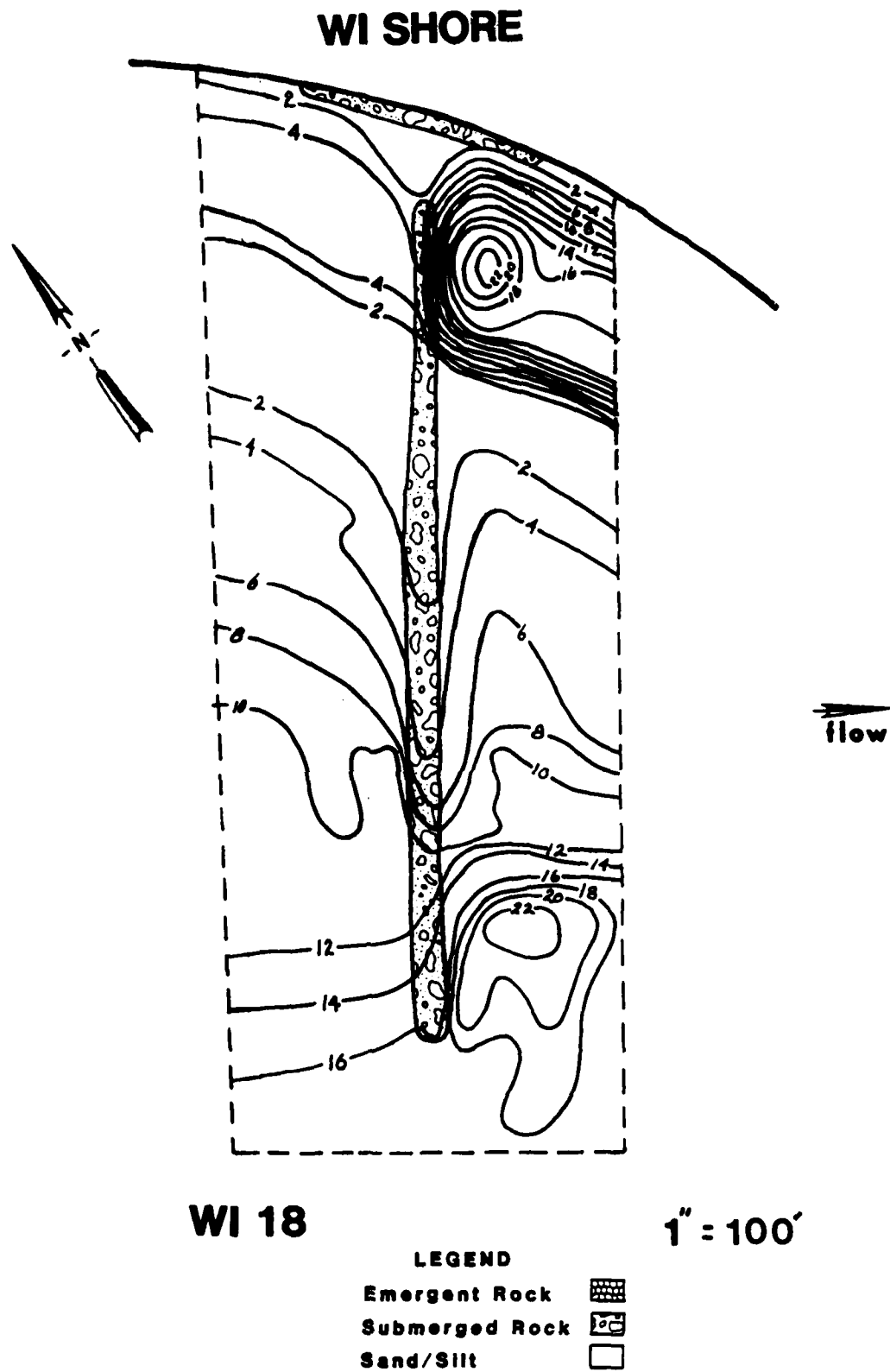


Figure D-77 General Bathymetric and Substrate Map of Wing Dam WI18

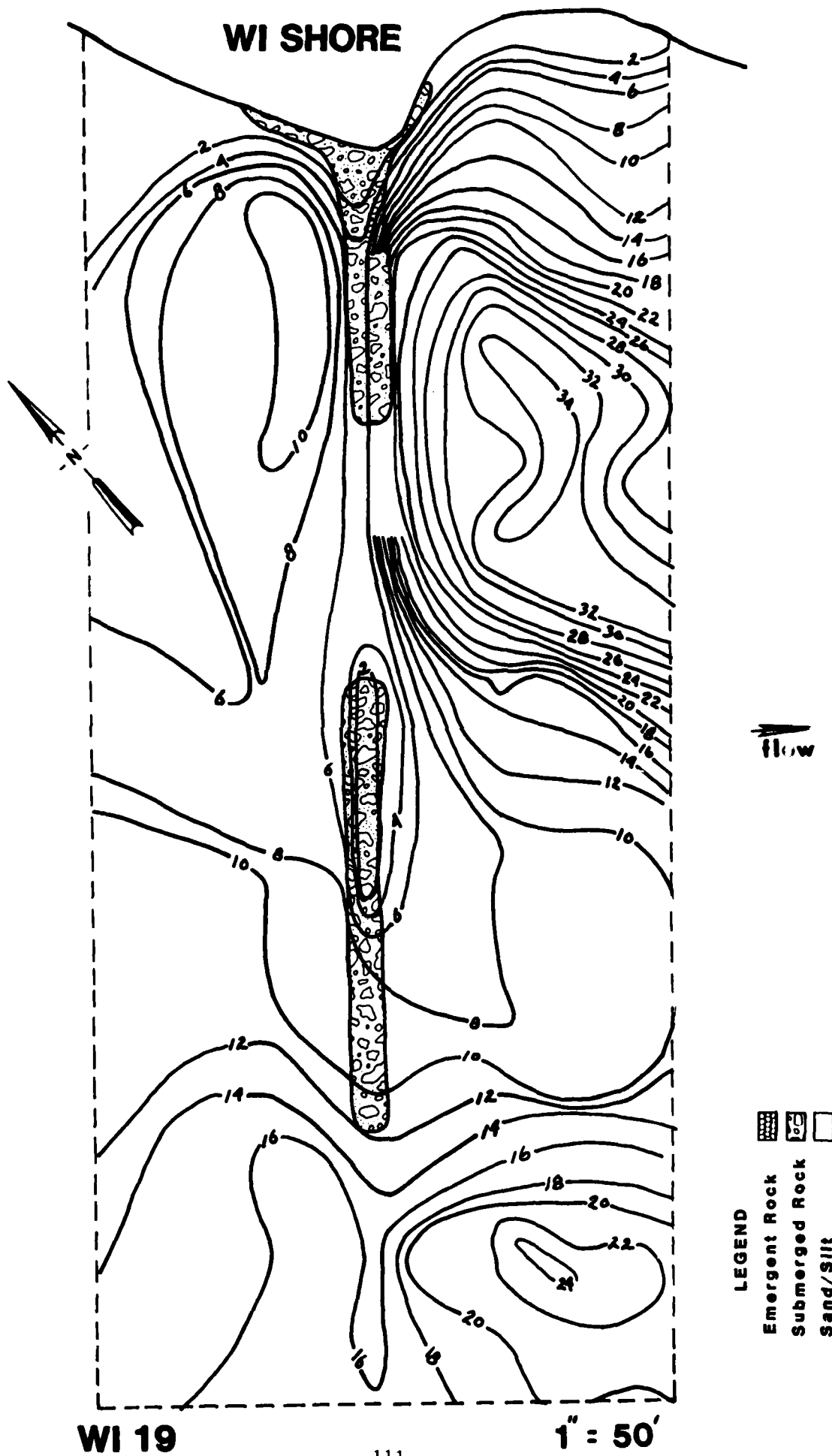


Figure D-78 General Bathymetric and Substrate Map of Wing Dam WI19

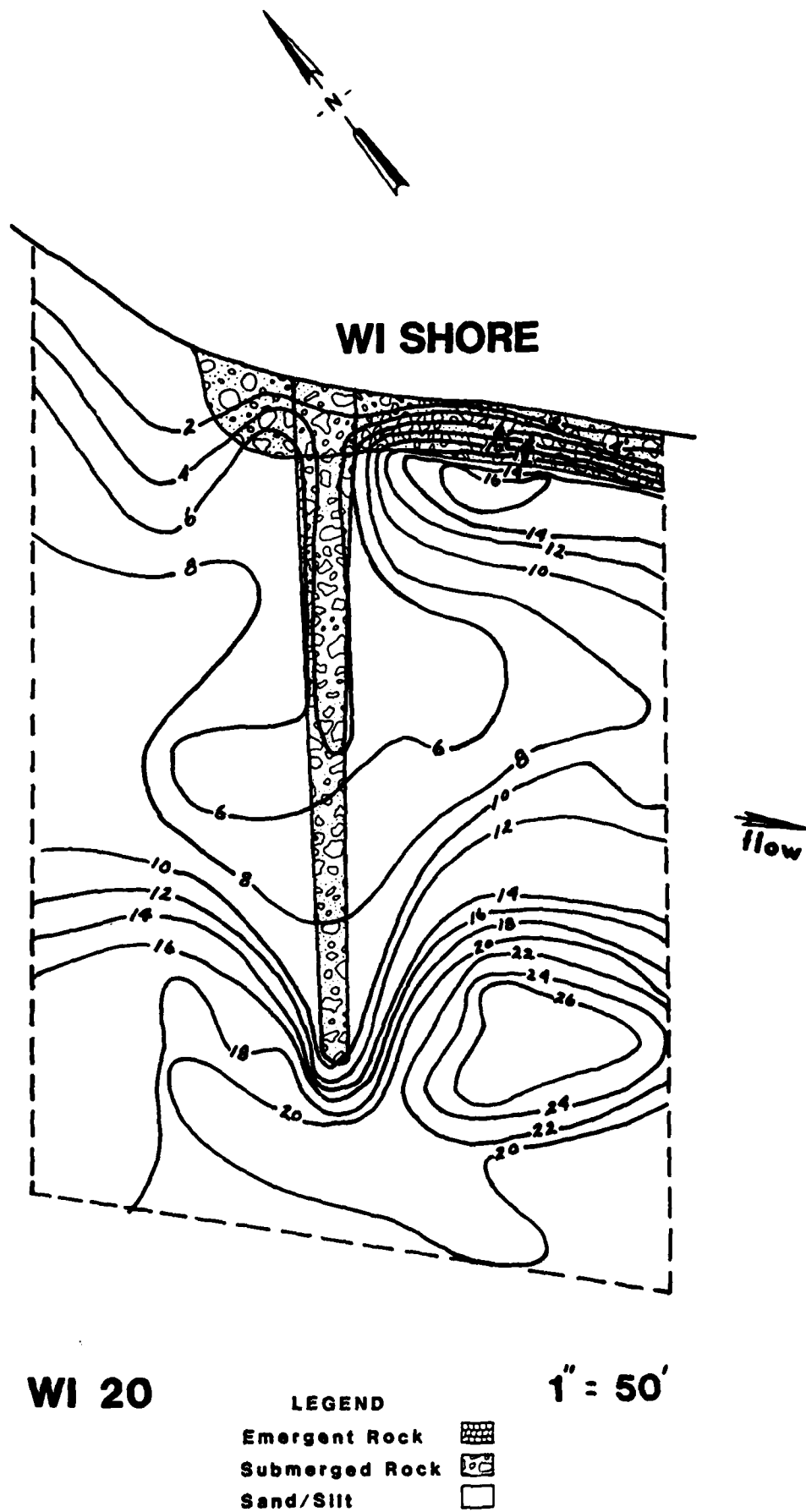
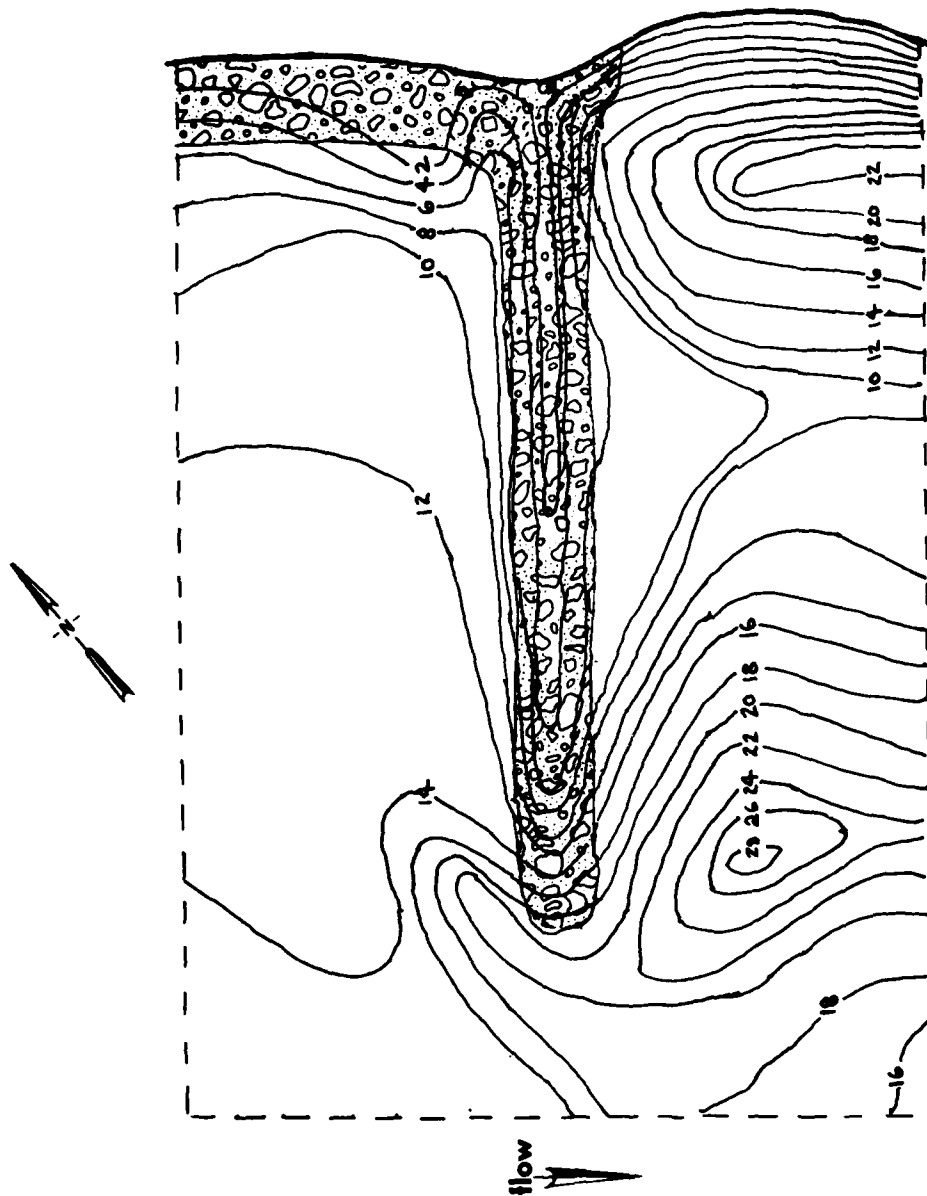


Figure D-79 General Bathymetric and Substrate Map of Wing Dam WI20



# WI SHORE



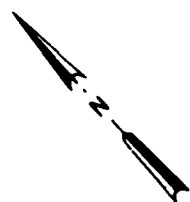
**WI 22**

## LEGEND

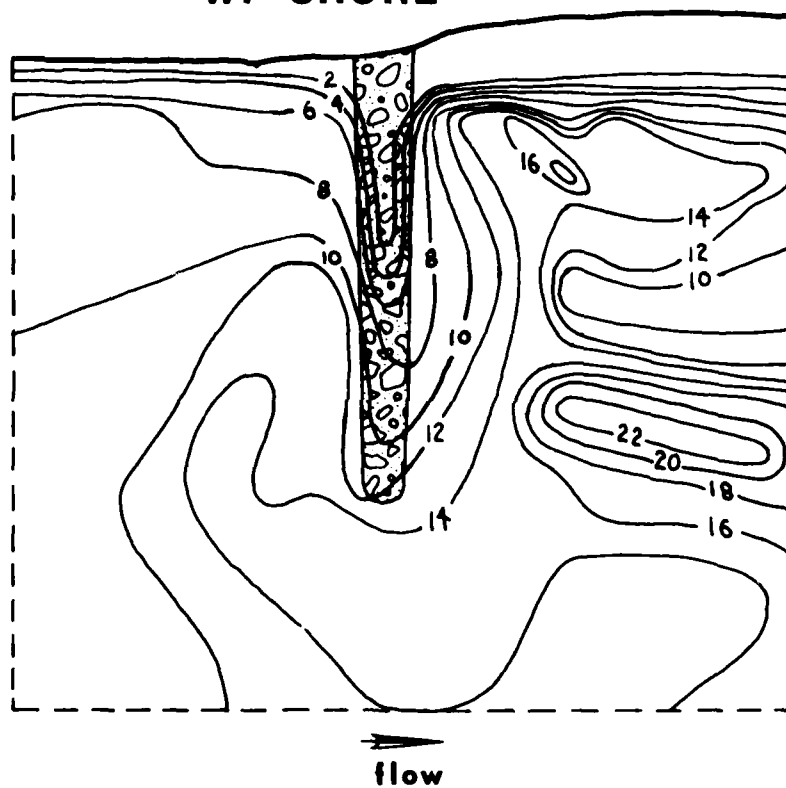
Emergent Rock   
 Submerged Rock   
 Sand/Silt 

**1" = 50'**

Figure D-80 General Bathymetric and Substrate Map of Wing Dam WI22



# WI SHORE



**WI 23**

## LEGEND

Emergent Rock



Submerged Rock

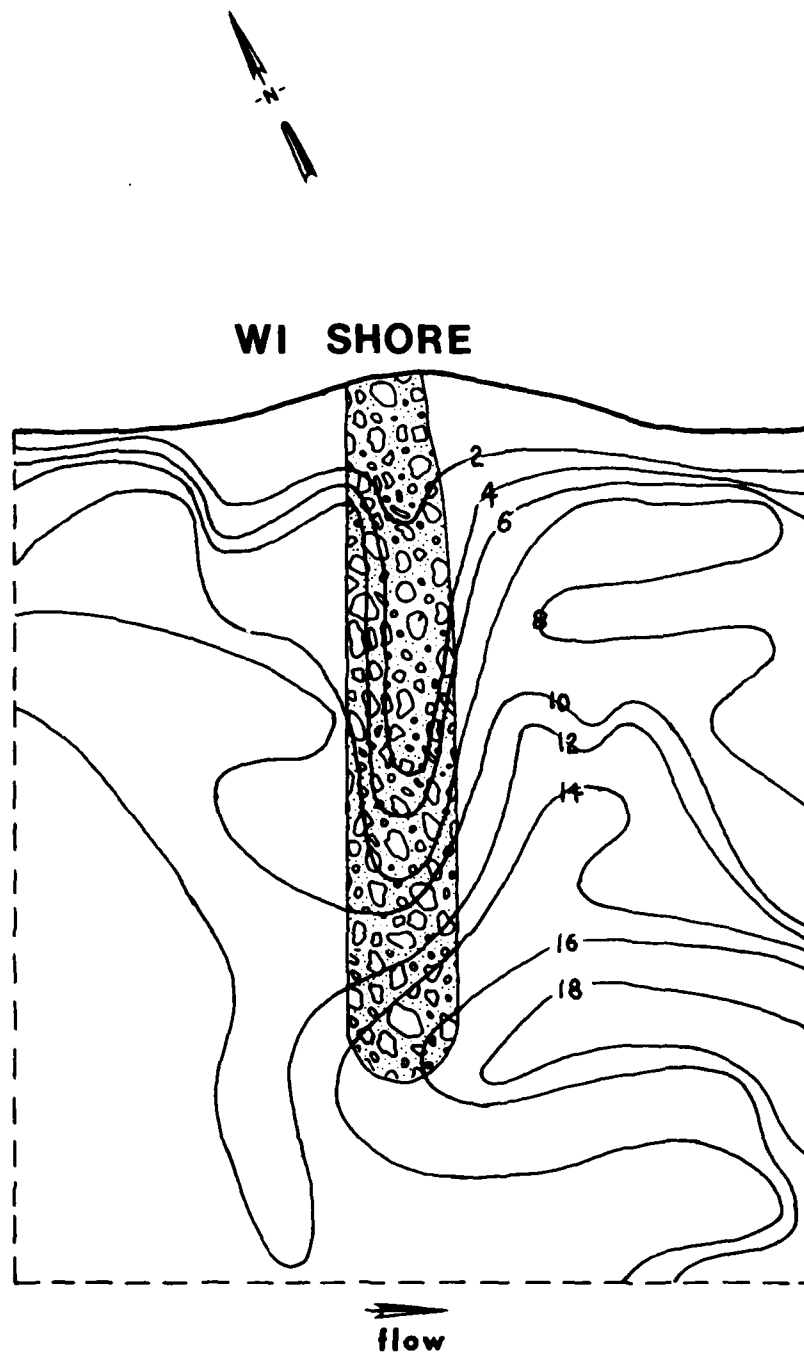


Sand/Silt



**1" = 50'**

Figure D-81 General Bathymetric and Substrate Map of Wing Dam WI23



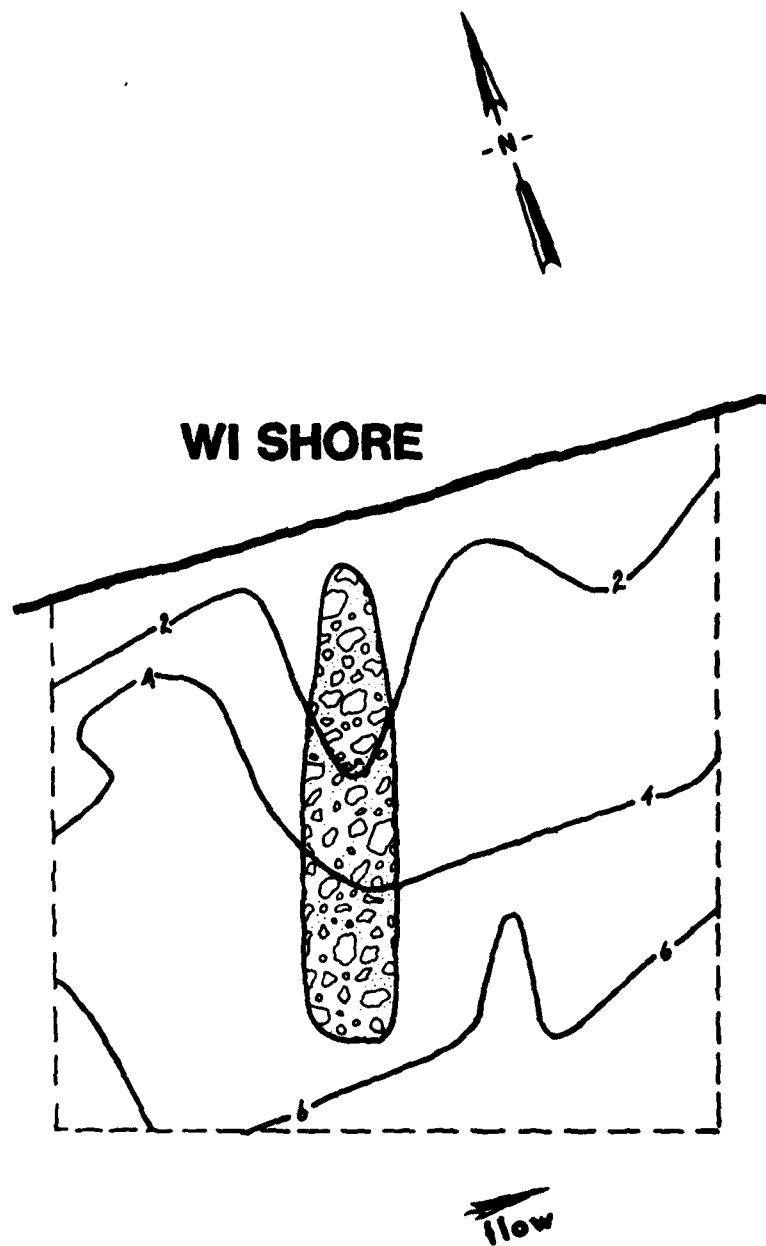
**WI 25**

**LEGEND**

- Emergent Rock** 
- Submerged Rock** 
- Sand/Silt** 

**1" = 50'**

Figure D-82 General Bathymetric and Substrate Map of Wing Dam WI25



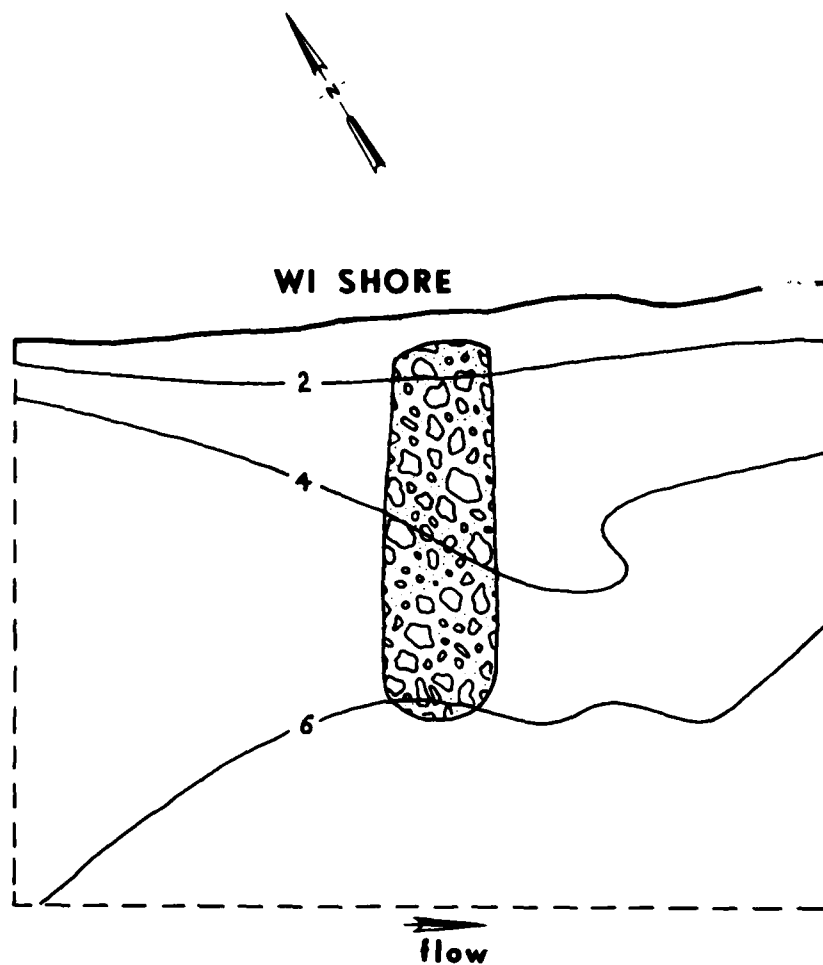
WI 26

1" = 50'

LEGEND

Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-83 General Bathymetric and Substrate Map of Wing Dam WI26



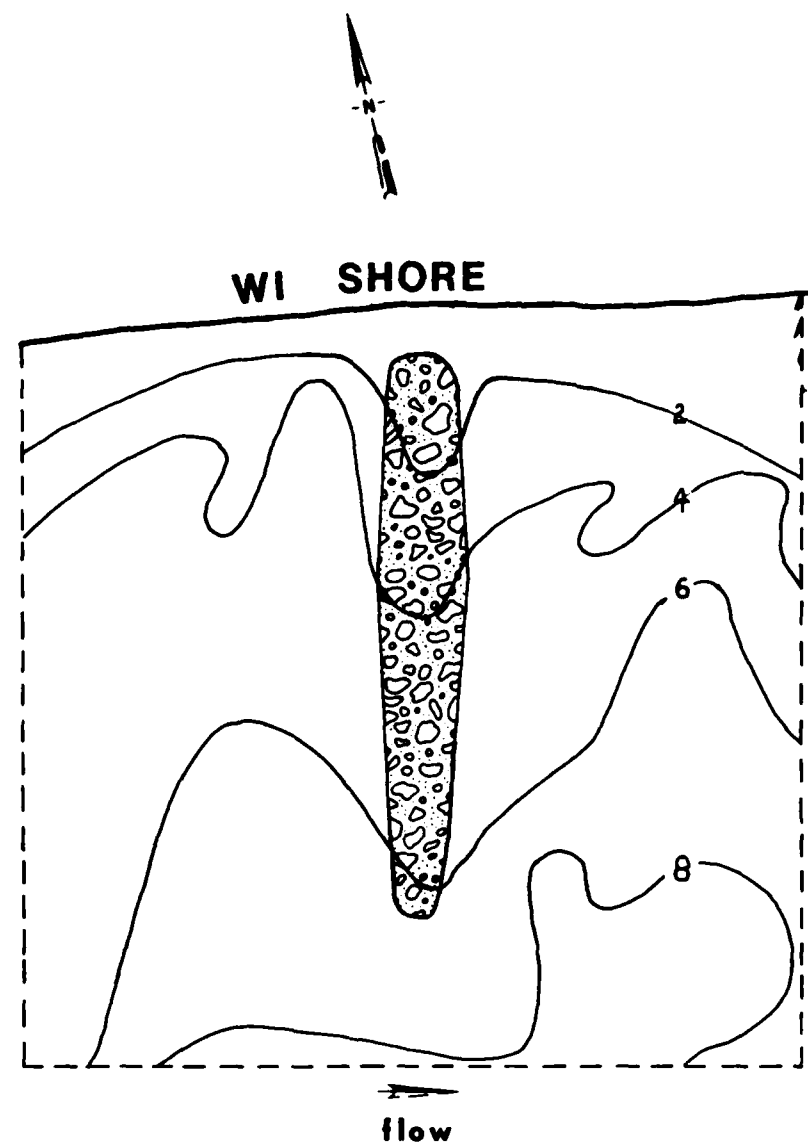
**WI 27**

**LEGEND**

Emergent Rock   
 Submerged Rock   
 Sand/Silt 

**1" = 50'**

Figure D-84 General Bathymetric and Substrate Map of Wing Dam WI27



**WI 28**

**LEGEND**

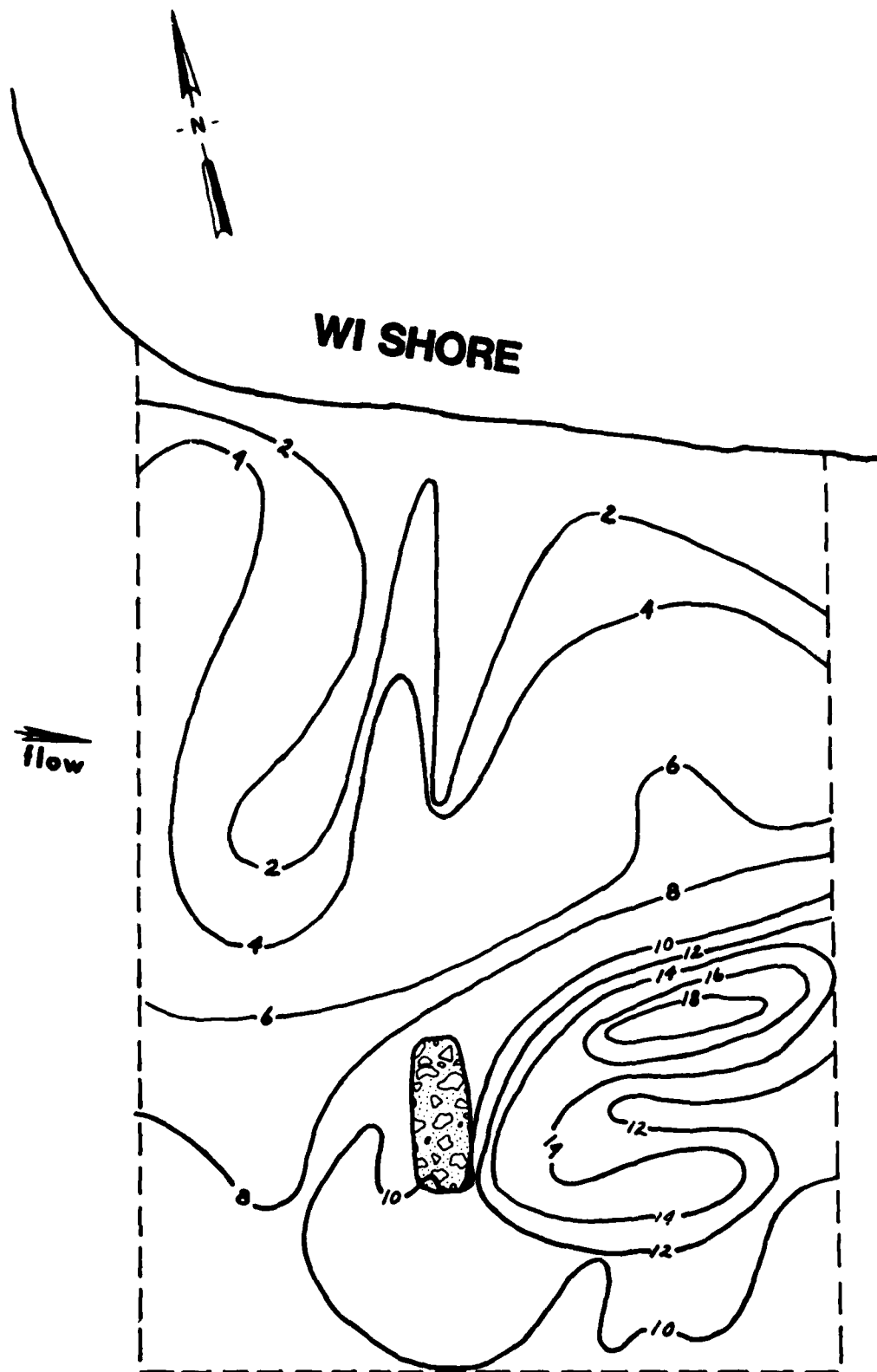
**Emergent Rock** 

**Submerged Rock** 

**Sand/Silt** 

**1" = 50'**

Figure D-85 General Bathymetric and Substrate Map of Wing Dam WI28



**WI 29**

**LEGEND**

Emergent Rock   
 Submerged Rock   
 Sand/Silt 

**1" = 50'**

Figure D-86 General Bathymetric and Substrate Map of Wing Dam WI29

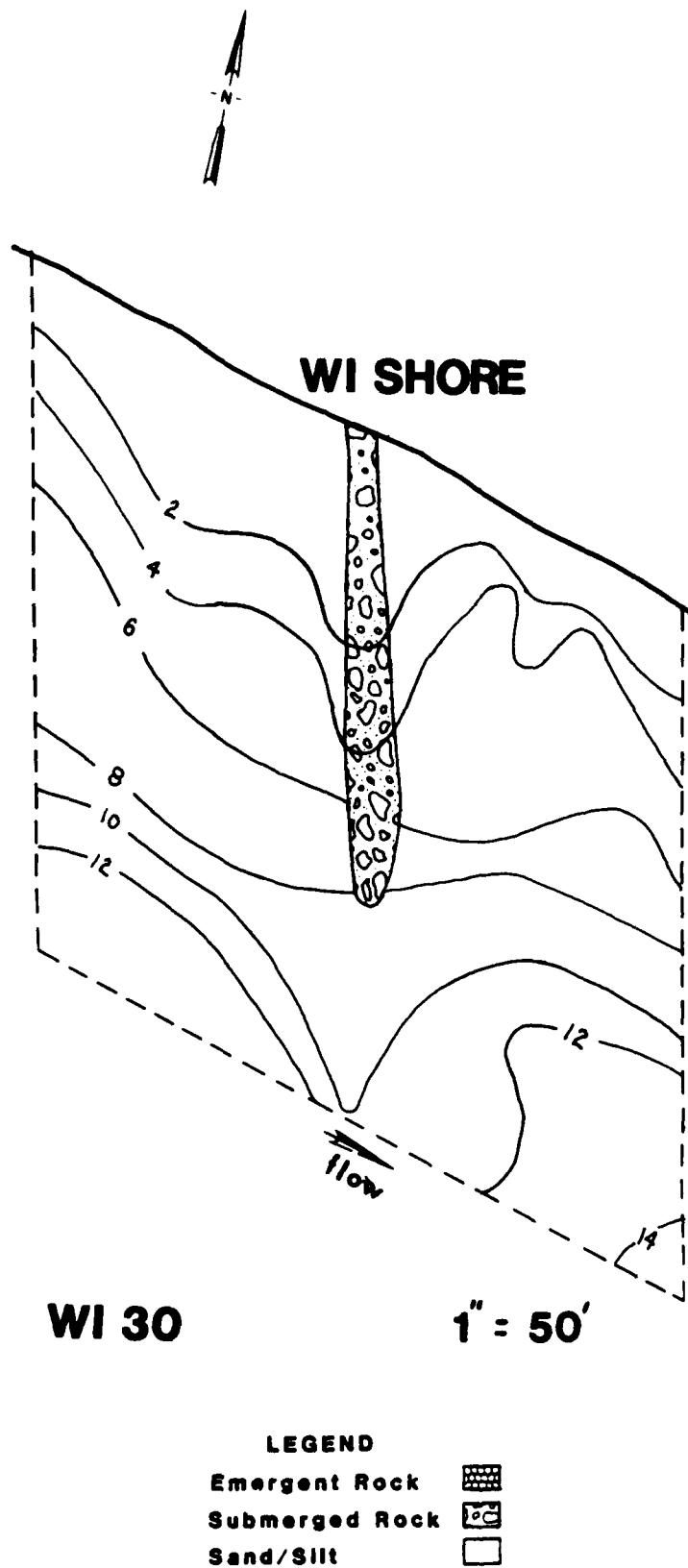


Figure D-87 General Bathymetric and Substrate Map of Wing Dam WI30



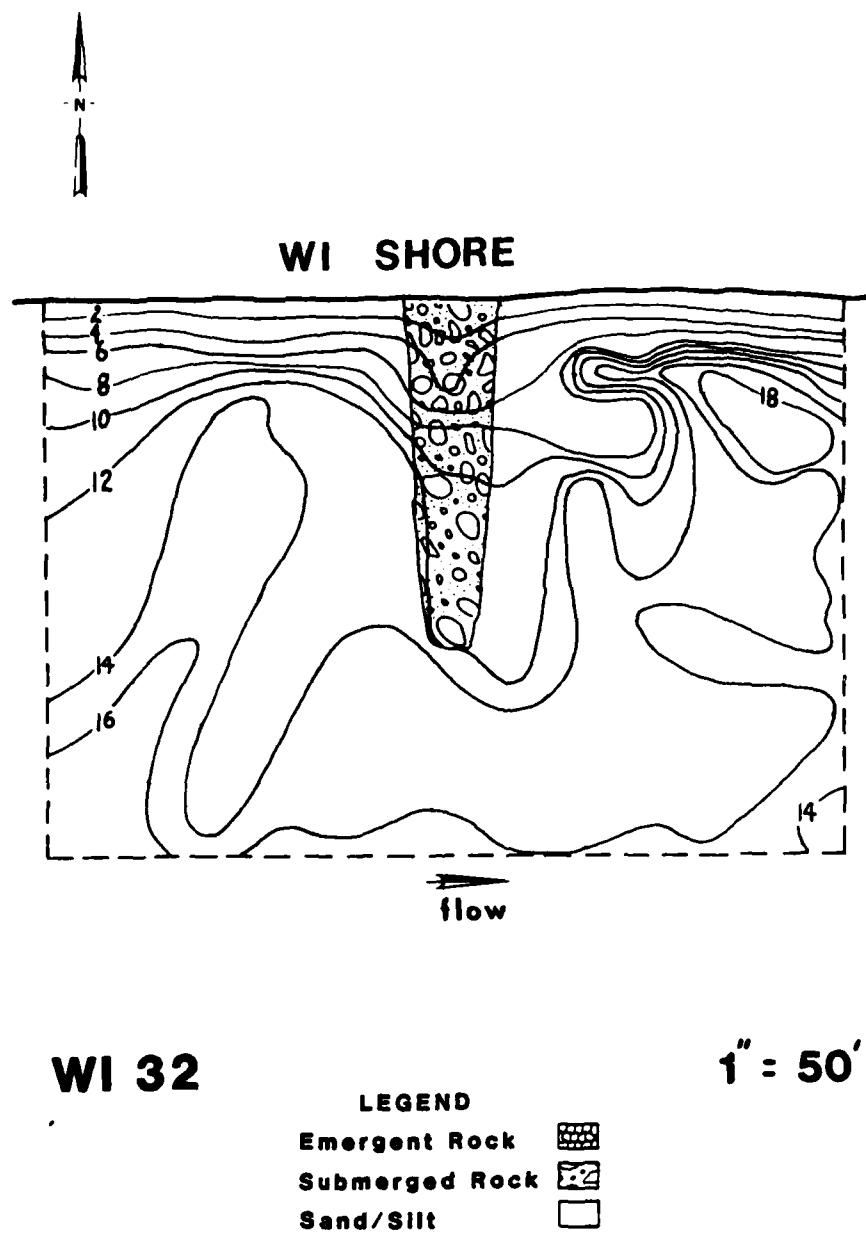
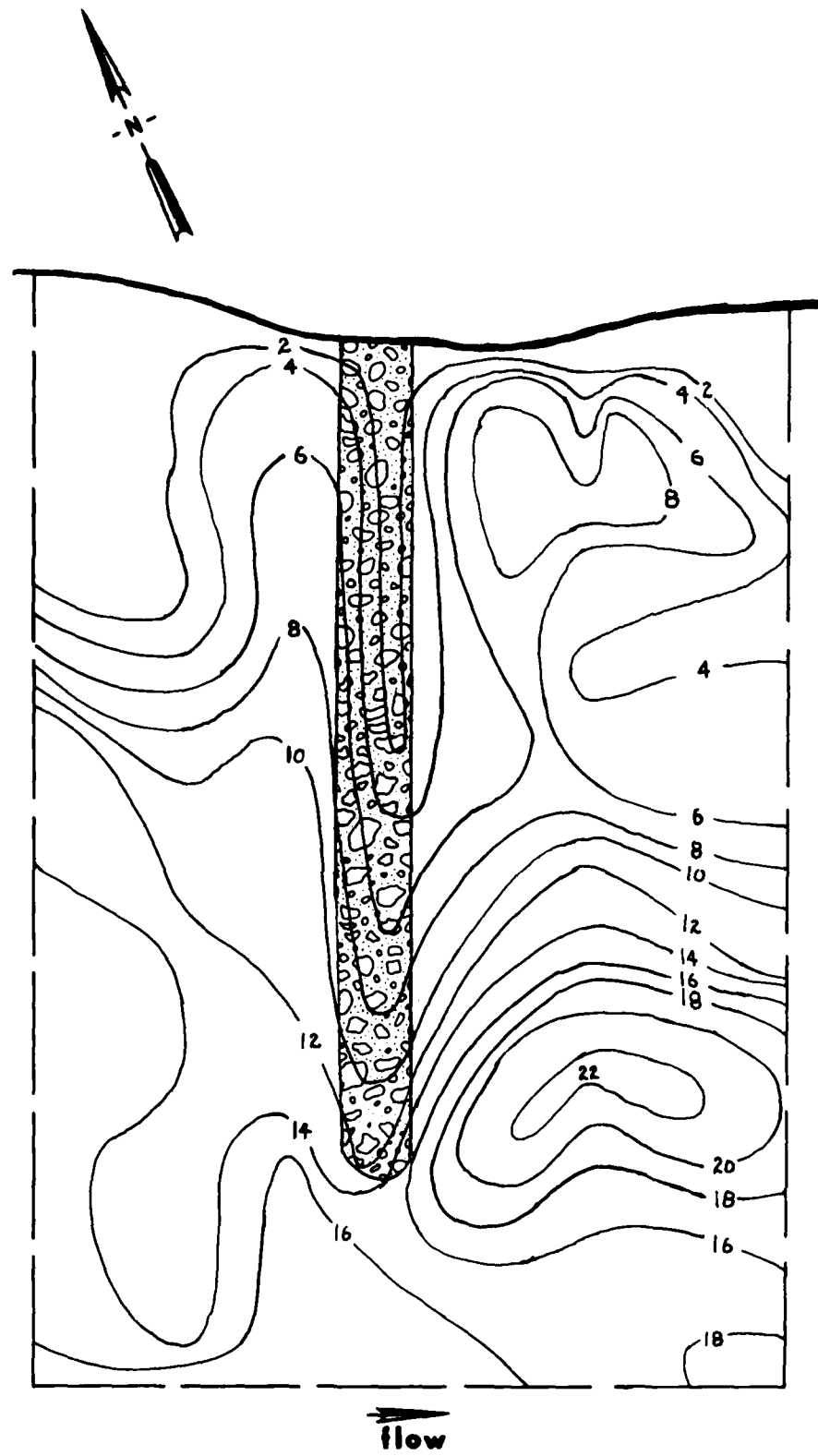


Figure D-88 General Bathymetric and Substrate Map of Wing Dam WI32



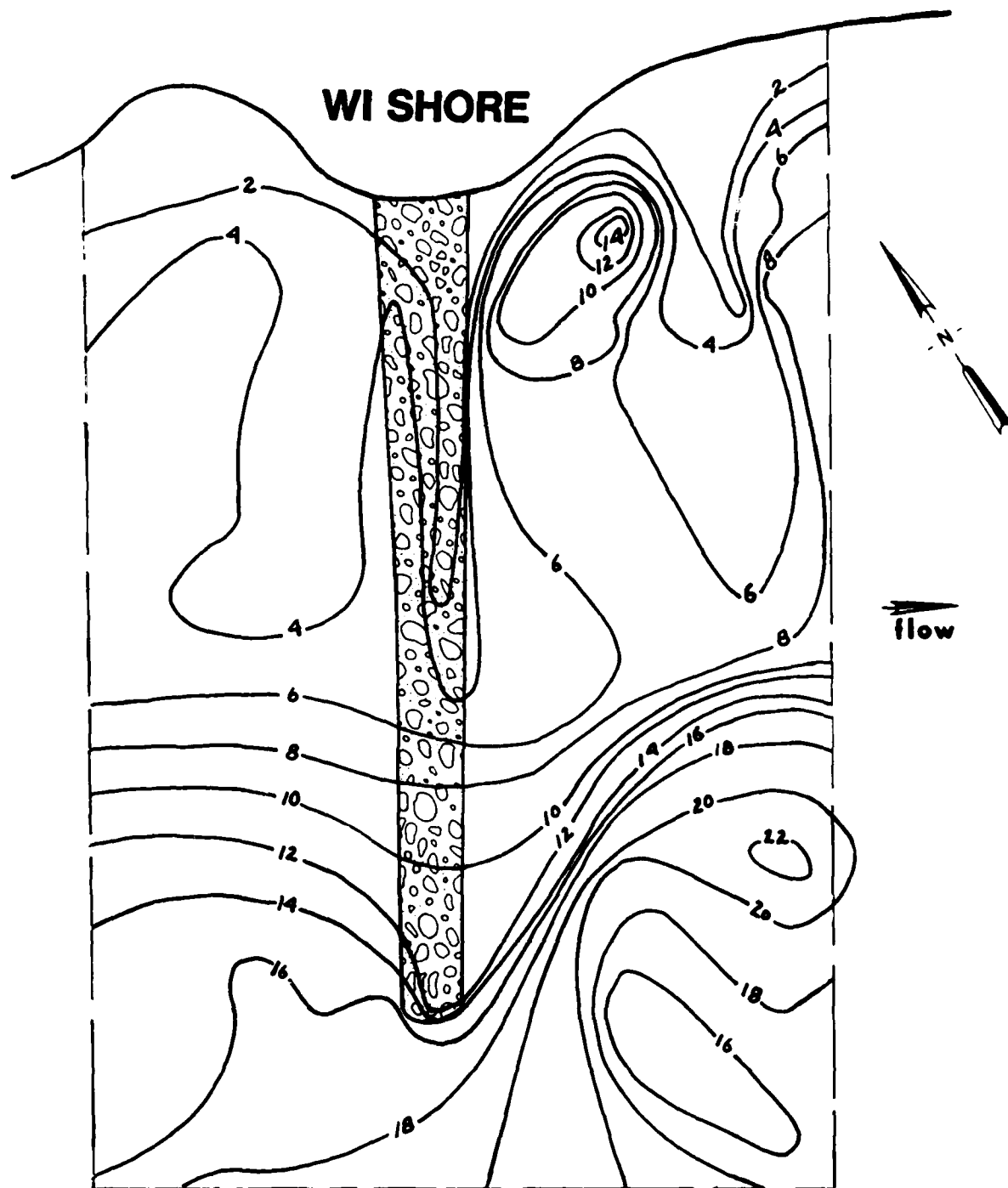
**WI 33**

**LEGEND**

Emergent Rock   
 Submerged Rock   
 Sand/Silt 

**1" = 50'**

Figure D-89 General Bathymetric and Substrate Map of Wing Dam WI33



**WI 34**

**LEGEND**

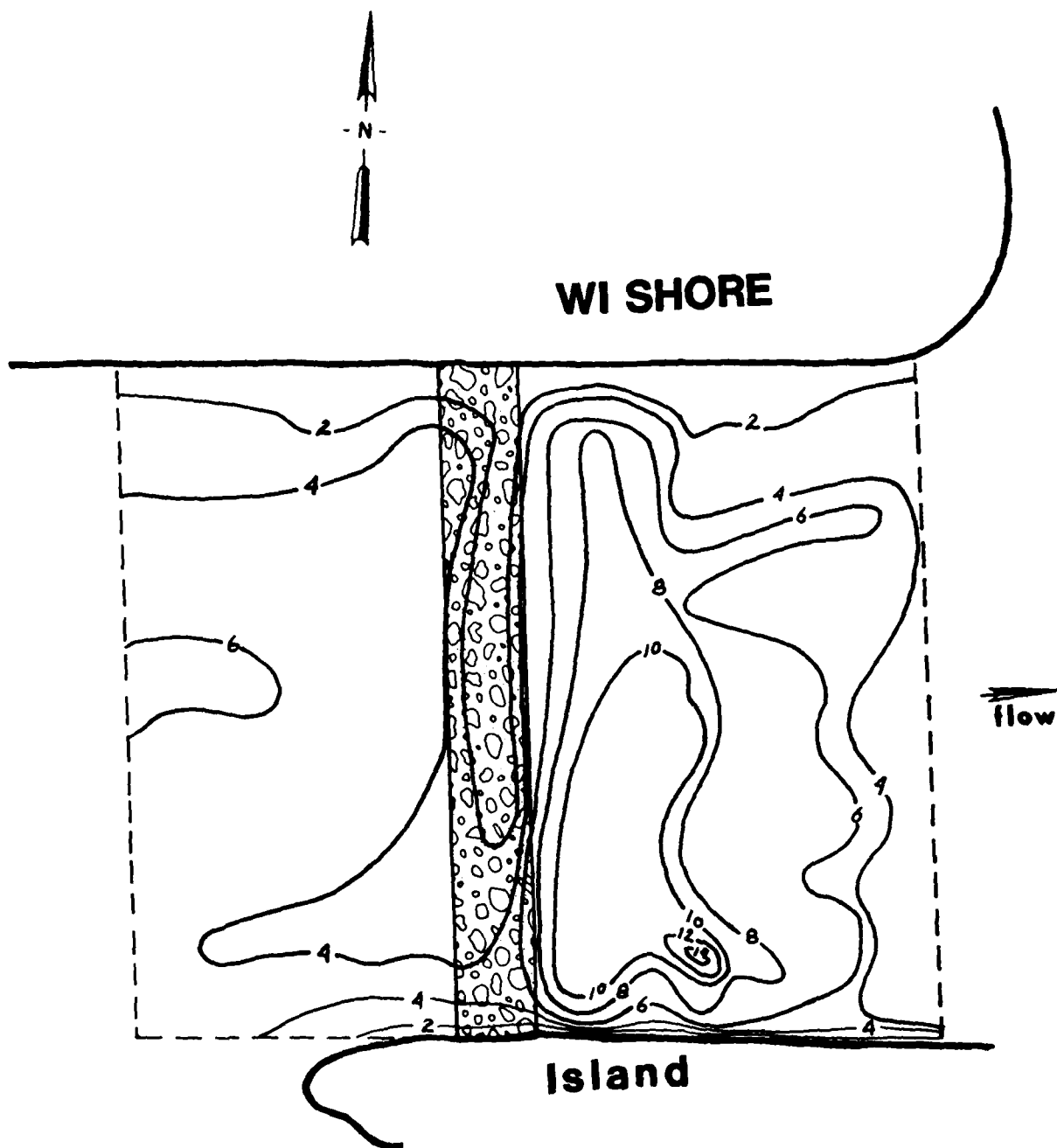
Emergent Rock

Submerged Rock

Sand/Silt

**1" = 50'**

Figure D-90 General Bathymetric and Substrate Map of Wing Dam WI34

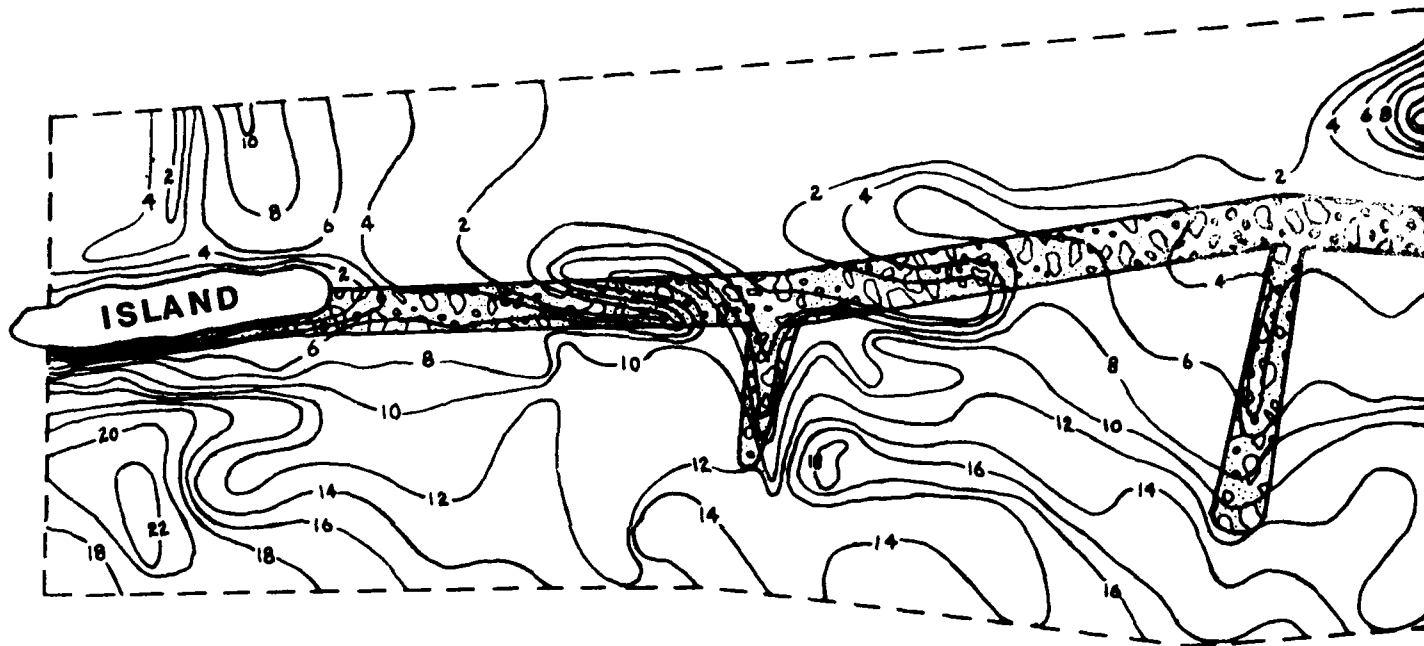


LEGEND

Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-91 General Bathymetric and Substrate Map of Closing Dam WI35

**W39**



flow

**LEGEND**

Emergent Rock	
Submerged Rock	
Sand/Silt	

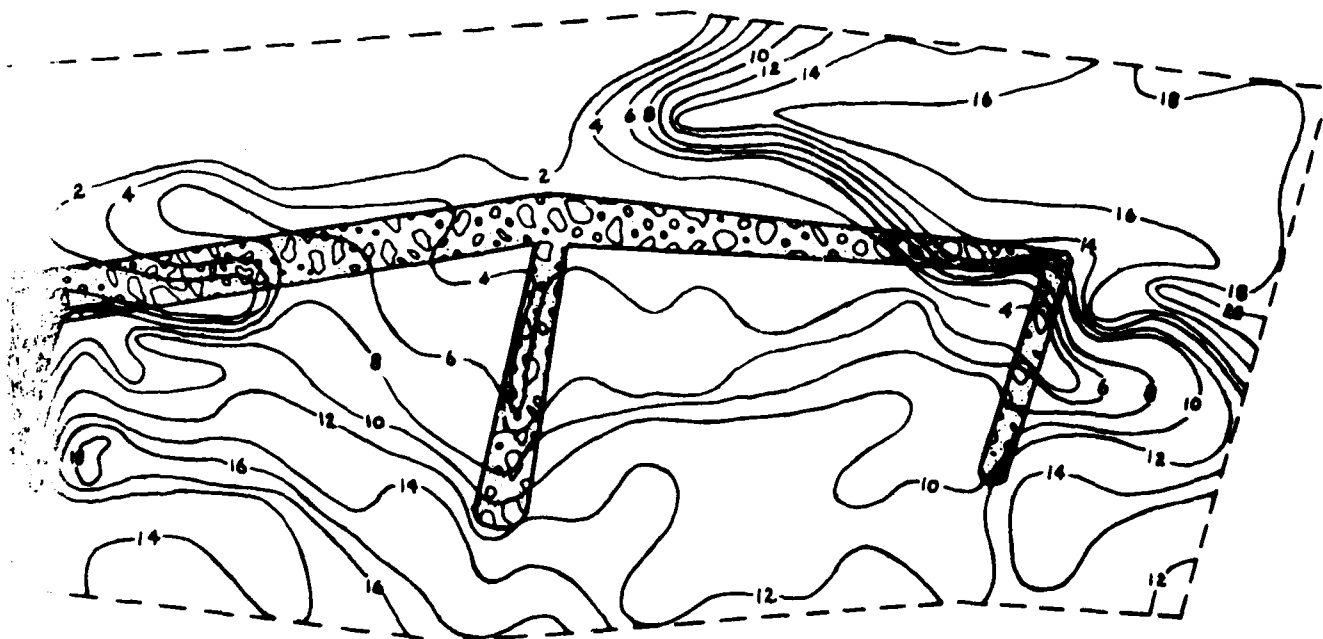
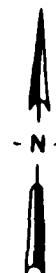
**W36**

**W37**

Figure D-92 General Bathymetric and Substrate Map of Wing Dam WI36, WI37, WI38, and

10/2

W39



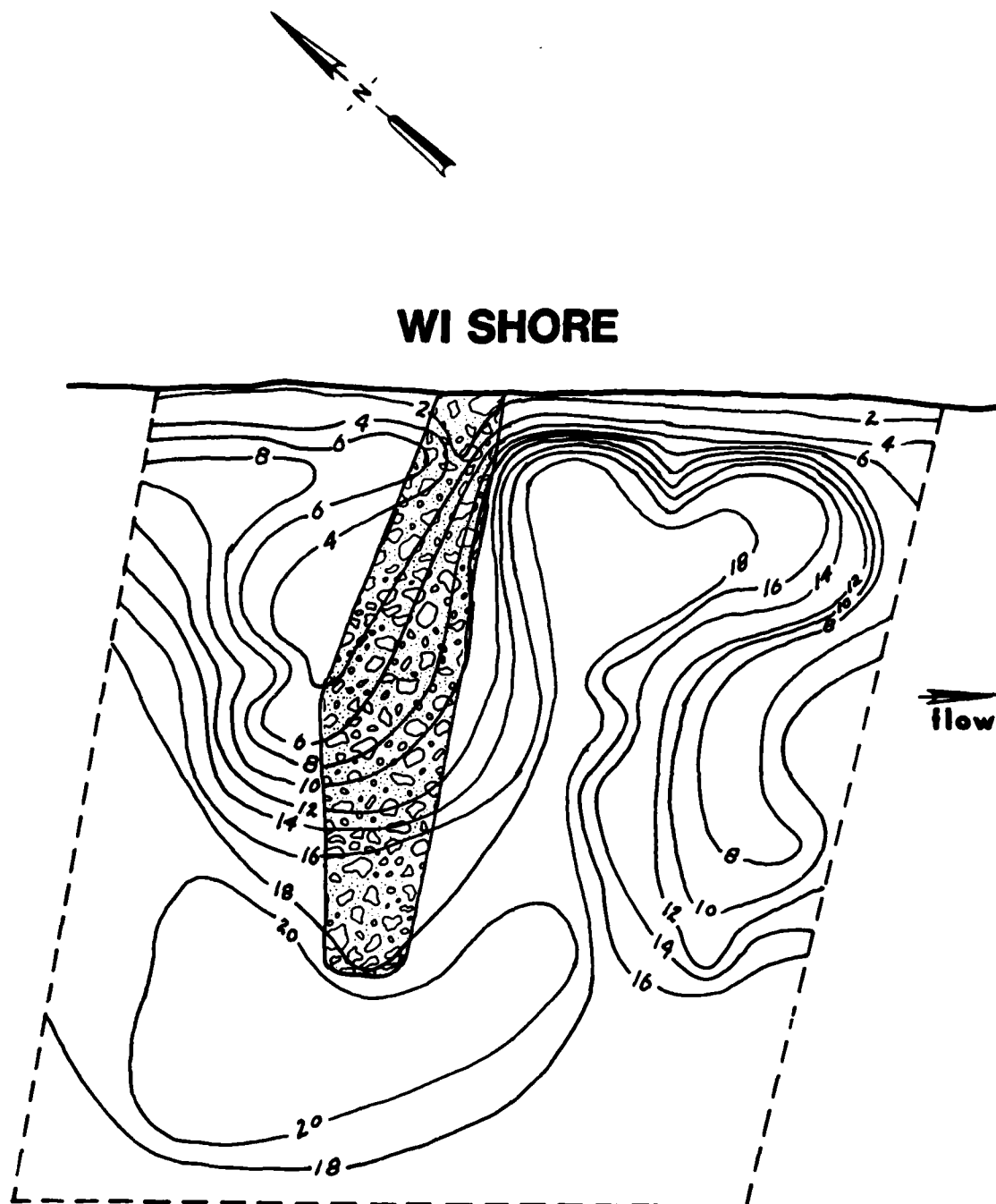
1" = 100'

W37

W38

Map of Wing Dam WI36, WI37, WI38, and Closing Dam WI39

2a/2 125



**WI 41**

**LEGEND**

Emergent Rock   
 Submerged Rock   
 Sand/Silt 

**1" = 50'**

Figure D-93 General Bathymetric and Substrate Map of Wing Dam WI41

# WI SHORE

Figure D-91 General Bat



WI 42, 43, 44

14/3

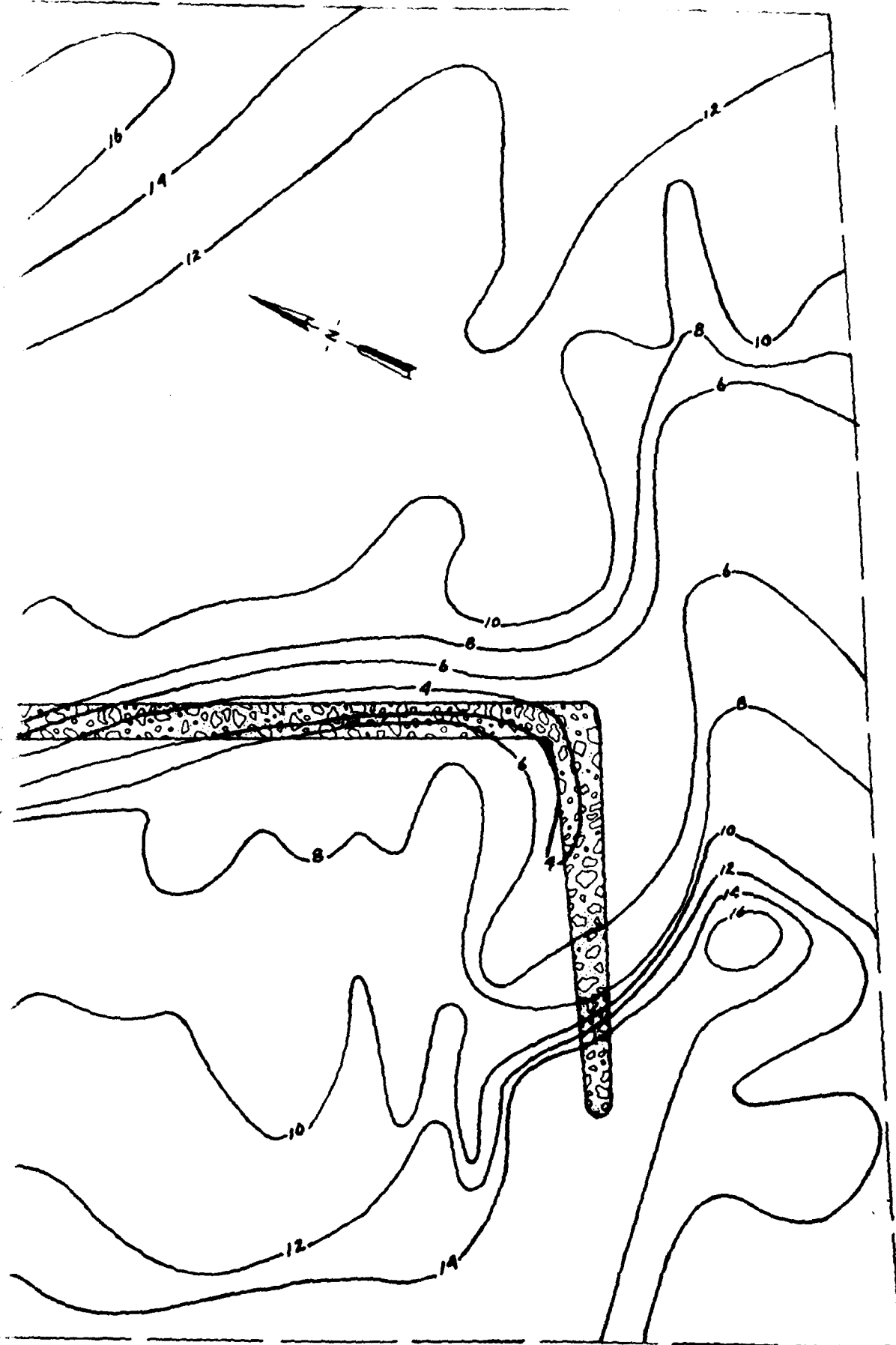
127



10-11 General Bathymetric and Substrate Map of Wing Dam Wash, Closing Dam W113 and Wing Dam W114



Wing Dam Well and Wing Dam Well



127

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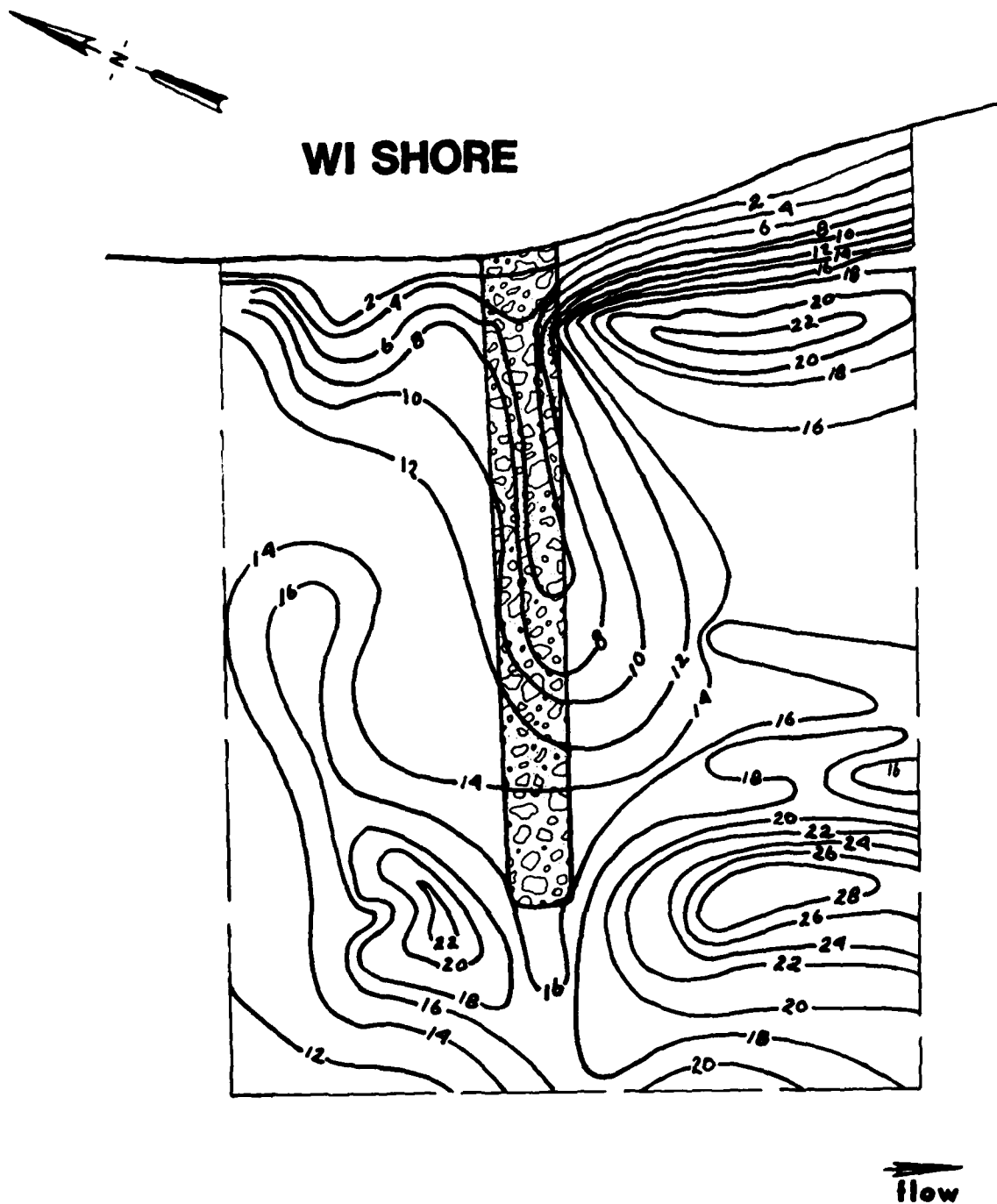


Figure D-95 General Bathymetric and Substrate Map of Wing Dam WI45

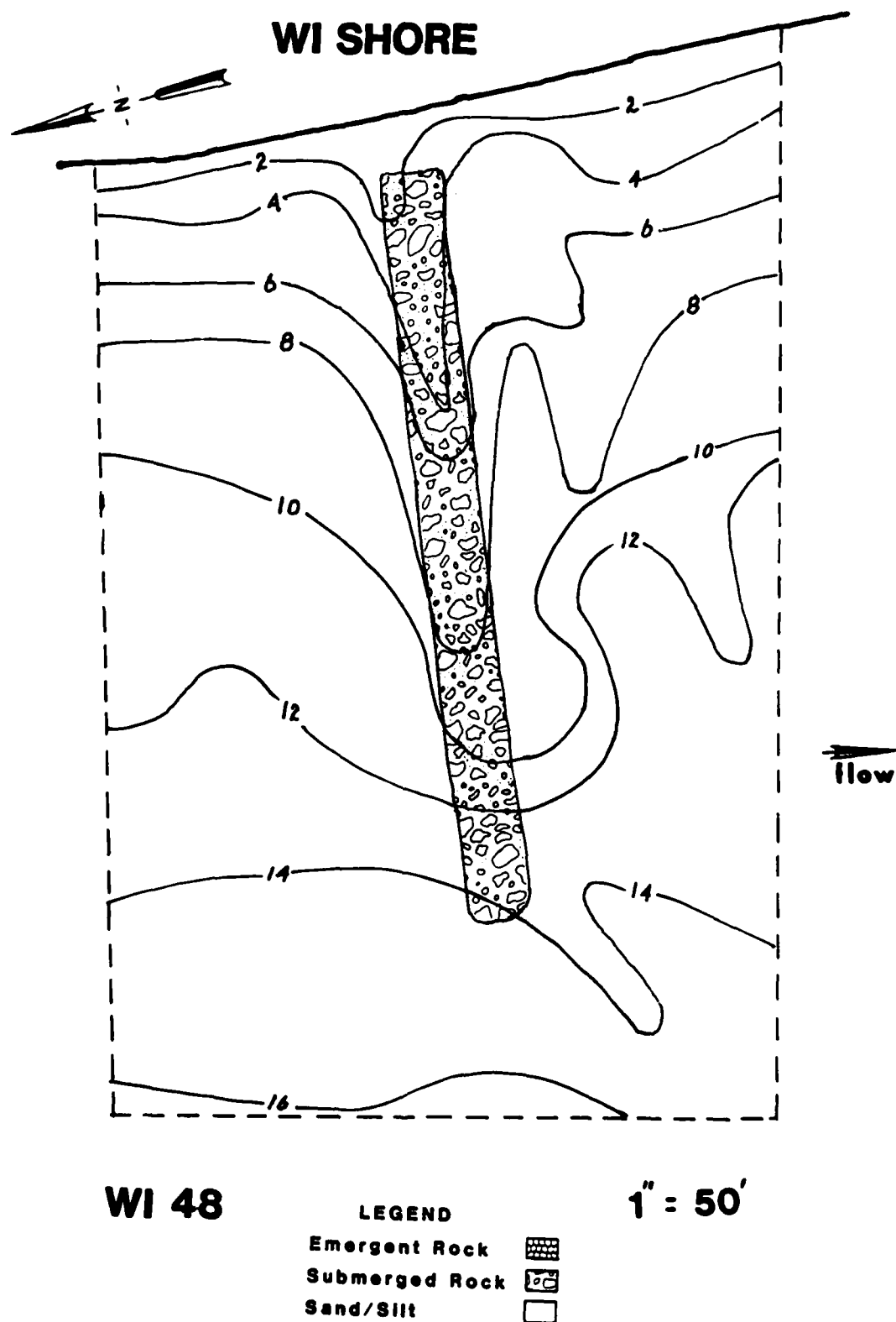


Figure D-96 General Bathymetric and Substrate Map of Wing Dam WI48

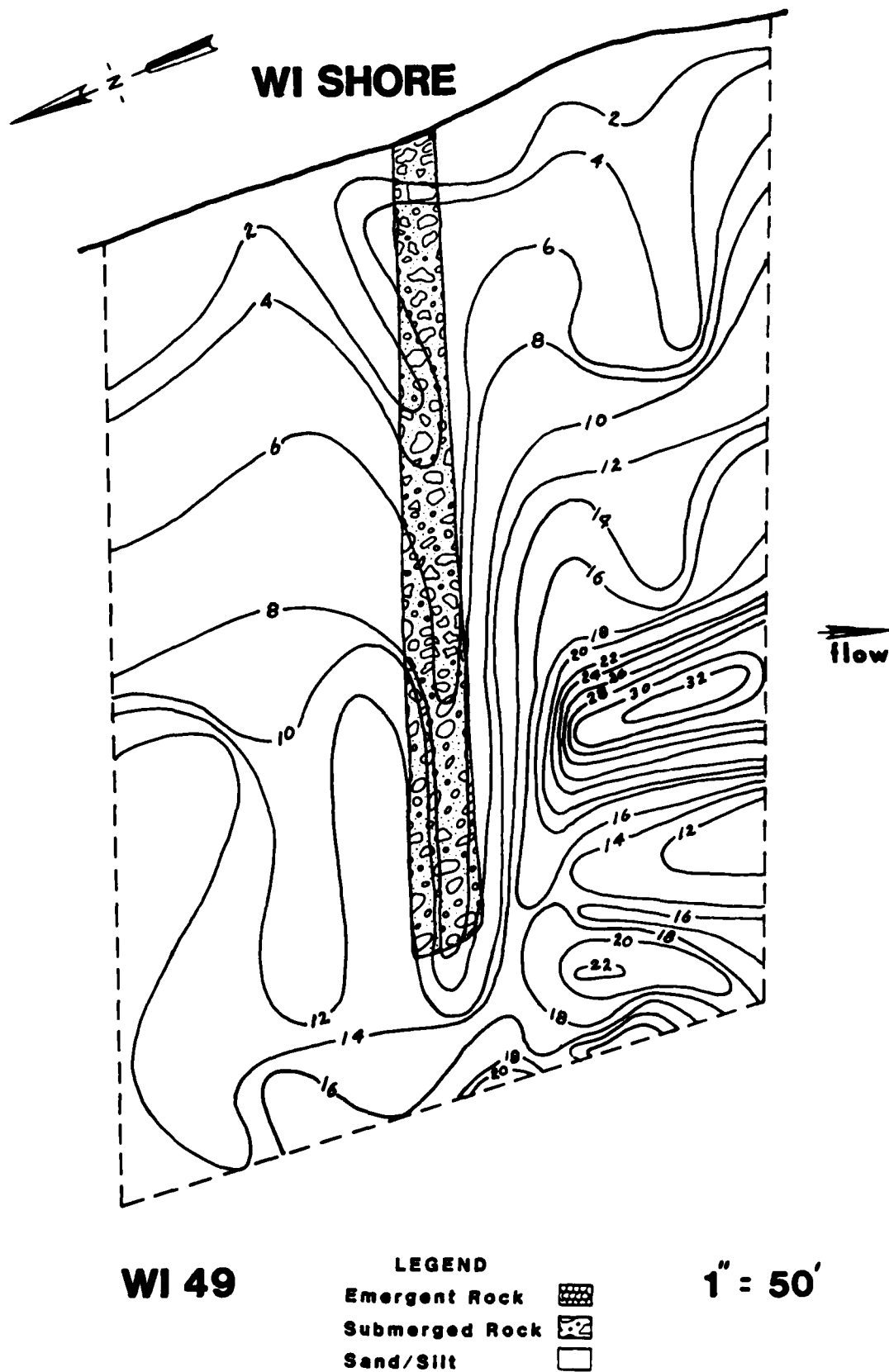
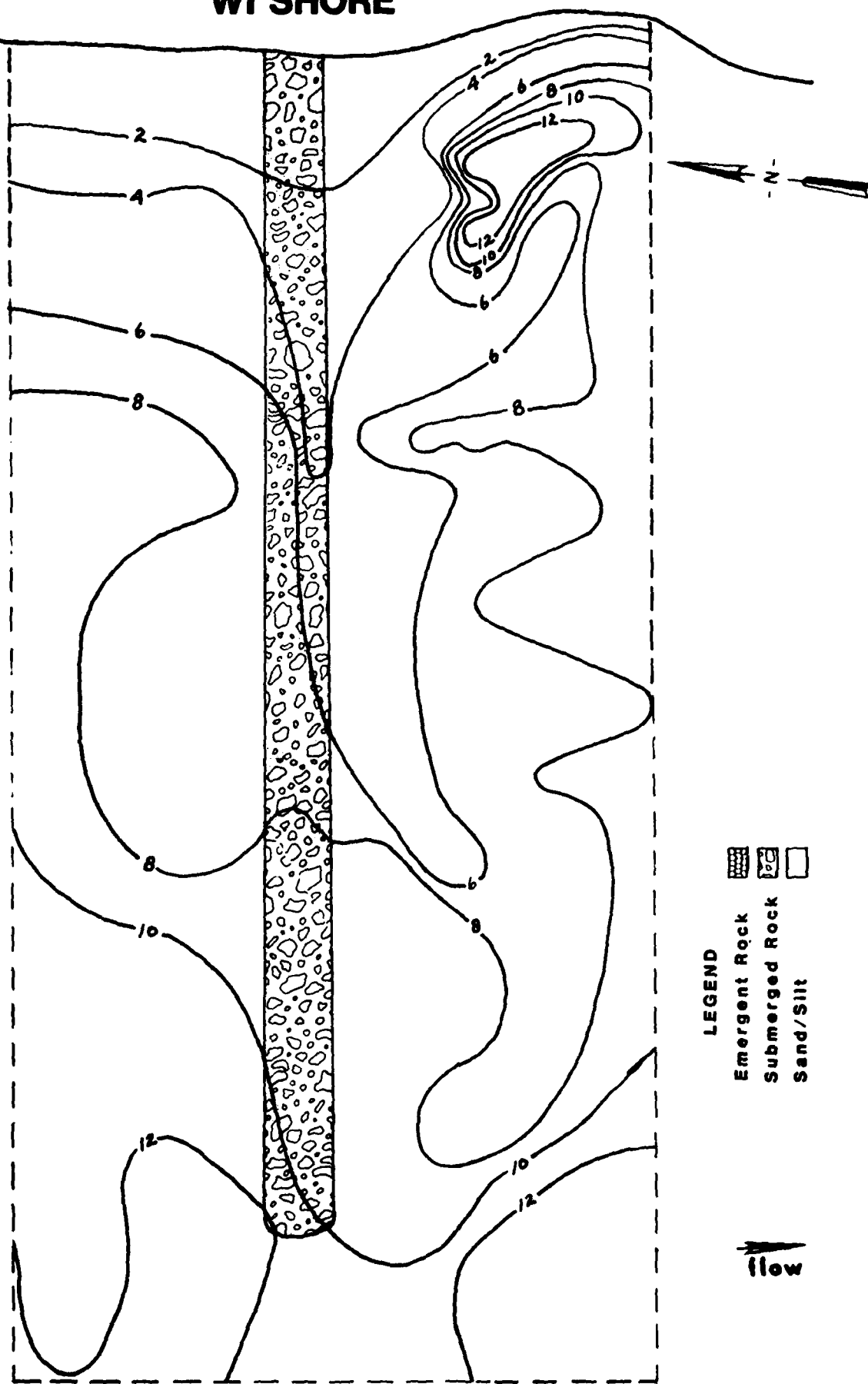


Figure D-97 General Bathymetric and Substrate Map of Wing Dam WI49

# WI SHORE



**WI 50**

**1" = 50'**

Figure D-98 General Bathymetric and Substrate Map of Wing Dam W150

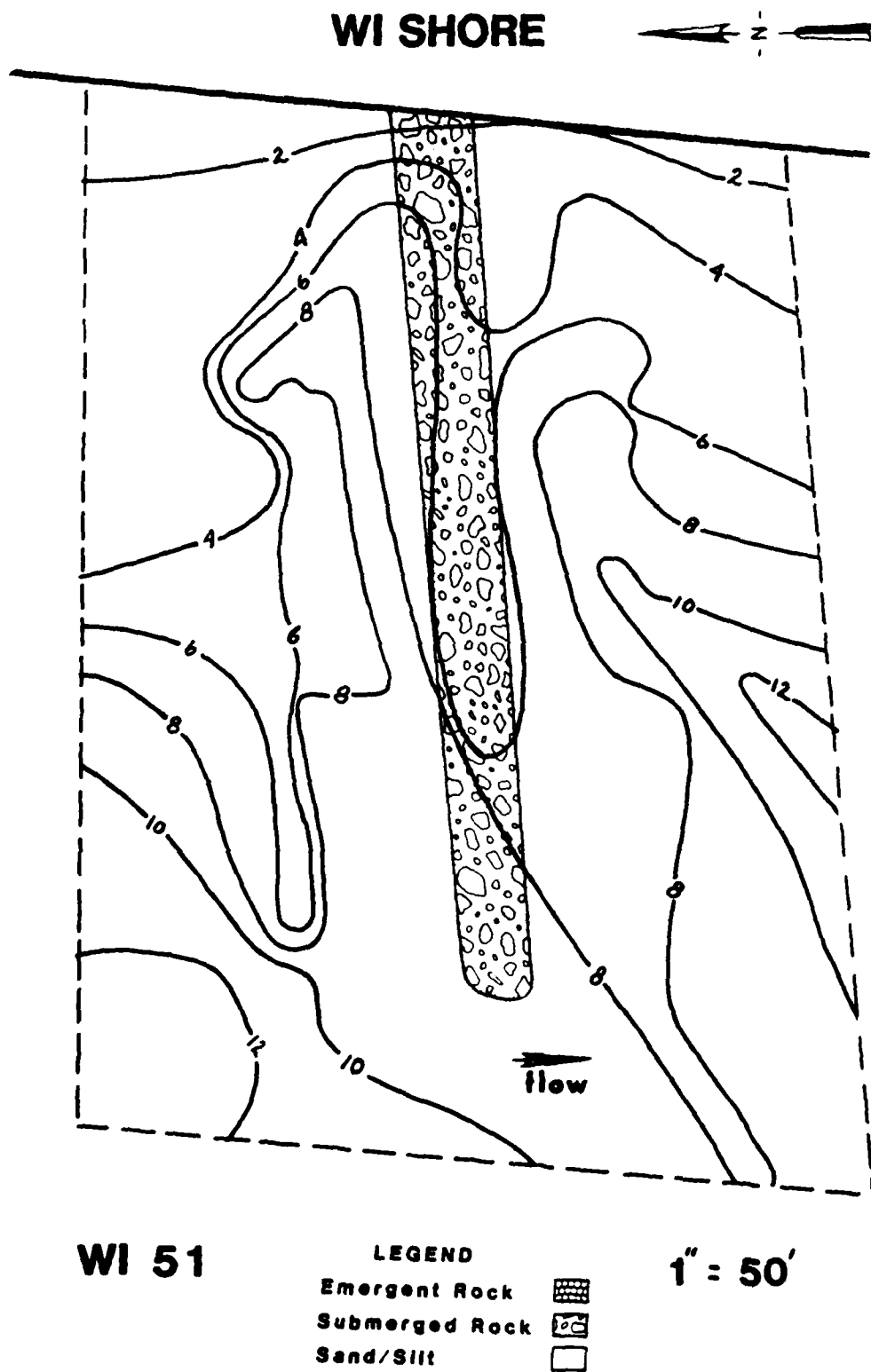


Figure D-99 General Bathymetric and Substrate Map of Wing Dam WI51

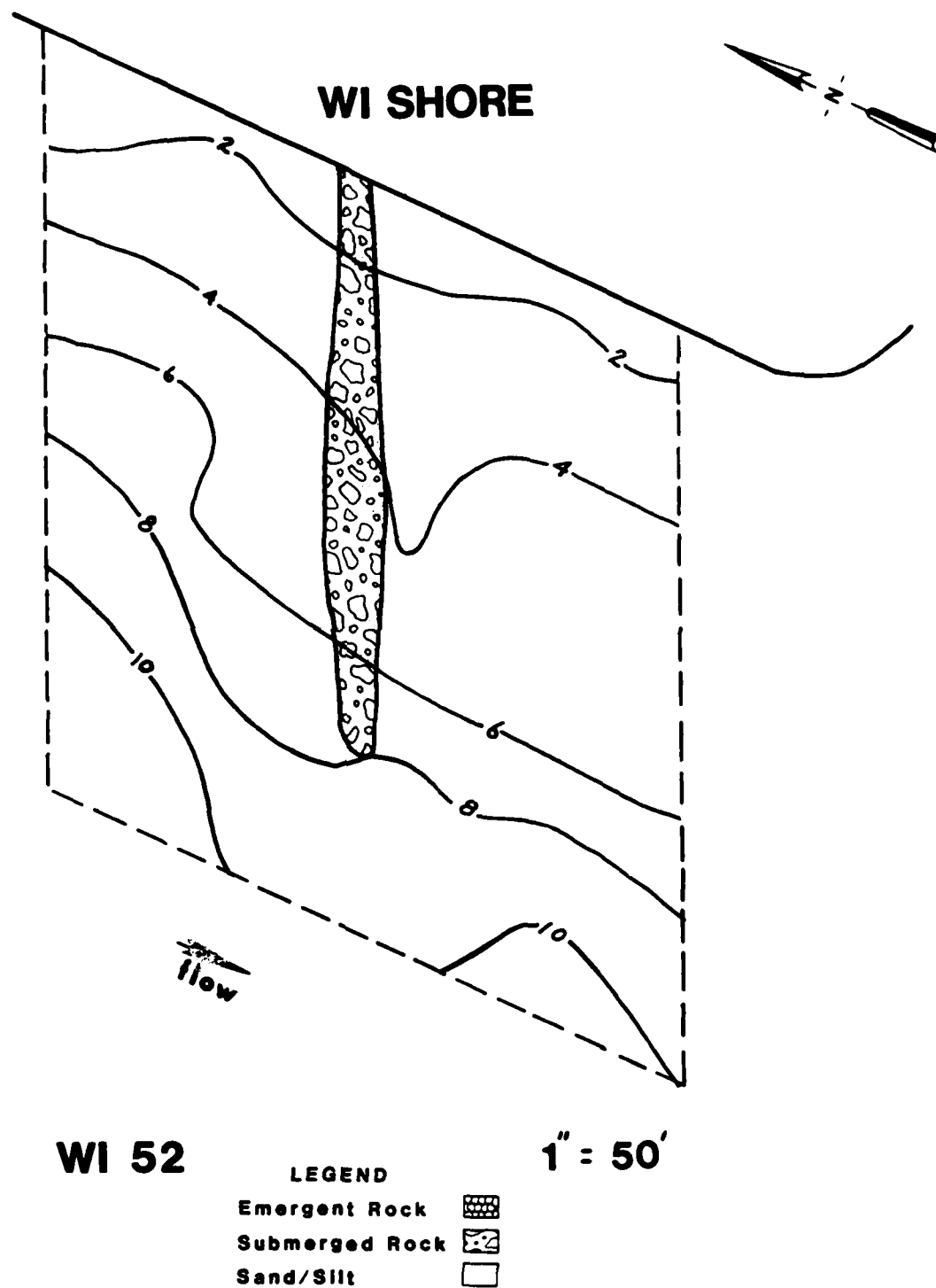
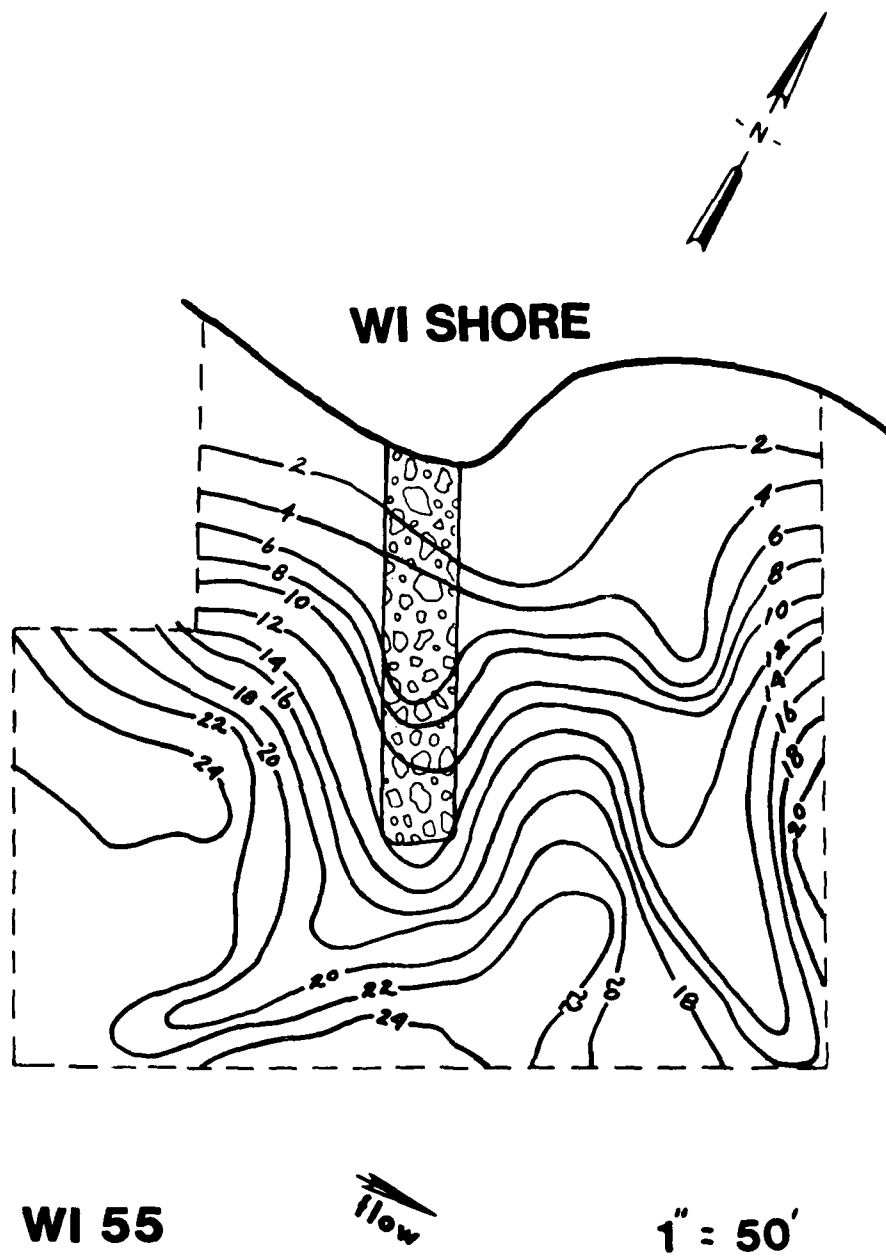


Figure D-100 General Bathymetric and Substrate Map of Wing Dam WI52





**LEGEND**

Emergent Rock	
Submerged Rock	
Sand/Silt	

Figure D-101 General Bathymetric and Substrate Map of Wing Dam WI55

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